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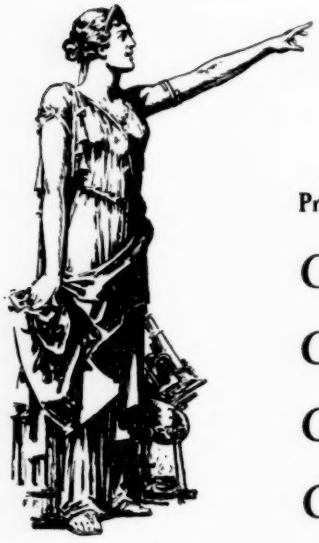

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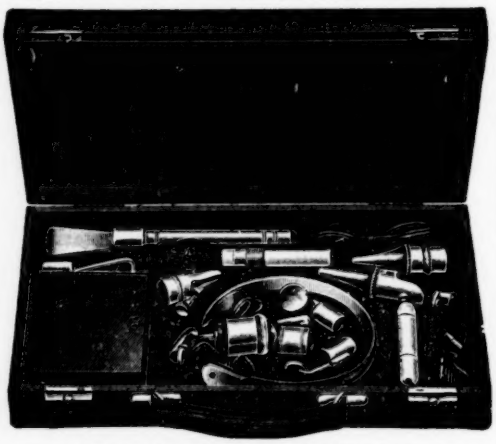

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THOSE who decided that the Malcolm Morris Memorial Lectures (of which this is the third) should be concerned alternately with dermatology and public health made a very wise and far-seeing decision. The subjects are closely interwoven, and to both of them Morris gave of his best.

I propose to sketch the progress of dermatology during the last 50 years, during most of which Malcolm Morris was an active force. When, after qualifying as a Member of the Royal College of Surgeons of England in 1870, and after a period of study in Vienna, Morris commenced practice in Goole, I question whether there were many inhabitants of the East Riding who had ever heard the word dermatology. Skin diseases were, at that period, commonly attributed to dirt (and my native country had an unenviable reputation in that respect), to some mysterious humours which no one could satisfactorily explain, or to gout, which, being a fashionable complaint of the better classes, was itself sufficient for the climbers of those days. It is so nearly 50 years since I commenced the study of medicine that I make no excuses for using that as another reason for the round figure. Nor, I think, do I need to make any when I begin these reflections with special reference to Edinburgh.

DERMATOLOGY IN EDINBURGH.

In 1880, dermatology in Edinburgh was in a state of hibernation. In the middle of the nineteenth century it had had quite an active period. Hughes Bennett, whose name is best known as a physiologist and as a physician, and to whom belongs the credit of having been the first to introduce the use of the microscope into the teaching of clinical medicine in Edinburgh, took an active interest in dermatology, and his writings on many dermatological subjects are still well worthy of perusal by even the youngest of our craft. He was not alone in his interest, for his colleague, Laycock, the Professor of Medicine, was also, to use the quaint wording of the Anatomy Act, "addicted" to dermatology. In those days, every professor in the Faculty of Medicine had the right to a share in the medical wards of the Royal Infirmary, for the purpose of giving clinical instruction to his students. But as there were not enough wards to go round there was an in-and-out arrangement, under which each took charge for periods of three months. Chance brought it about that the charge of the wards allocated to the diseases of the skin alternated between Laycock and Hughes Bennett, and I have heard from many old friends, now passed to their rest, of the enjoyment of the students who had the opportunity of going round with each when he took over charge from the other, and of hearing very candid accounts of the blunders in diagnosis and the inadequate treatment which had occurred during his absence. They had no direct followers and when I began medicine in 1880 there were no skin wards in our new Royal Infirmary. There was, however, one ward in which there were usually some skin cases. I alluded a few minutes ago to the fact that any professor in the faculty could claim opportunities for teaching clinical medicine, and that in the past these opportunities had been exercised by occupants of the chairs of botany, chemistry, anatomy, pathology, materia medica, physiology, and medical jurisprudence. In the days I speak of the last of these chairs was occupied by Sir Douglas Maclagen, a member of a famous Scottish family which supplied southerners with an Archbishop of York. Sir Douglas, before he was appointed professor, had served his time as an ordinary surgeon to the infirmary but, curiously, the privileges granted to the physicians were not extended to the surgeons. In his youth, Maclagen had spent a good deal of time in post-graduate study in Paris, then the Mecca of dermatology and, on his return to active duty as a physician in the infirmary, he filled many of his beds with skin cases, and when his turn came round to give a clinical lecture he usually selected his subject from some of them. Several of the ordinary physicians and surgeons took some interest in skin diseases and it was my good fortune to commence clinical work—as Chairman of the Examination Committee of the General Medical Council I should almost blush to confess it—in my very first year under one whose personality is known the whole world over, thanks to Sir Arthur Conan Doyle, as Sherlock Holmes. Dr. Joseph Bell was the last of a long line of Bells, surgeons in Edinburgh. To his out-patient clinics came patients with all sorts of diseases, not a few of them dermatological, and no one would have appreciated more intelligently the detective skill which Joe Bell showed in investigating these cases than Malcolm Morris. It was from Bell that I first learned to distinguish between lupus and rodent ulcer, a distinction not made and not regarded as seriously important by some of his colleagues. A happy inspiration led me to ask the clerk of the Royal College of Surgeons of Edinburgh to search the minutes of the College, and I learnt with great interest that Malcolm Morris was proposed for the Fellowship of the College in 1882 by Sir Joseph Fayrer and seconded by Dr. Joseph Bell. Morris often used jokingly to refer to the fact that a part of his success was to be attributed to the fact that, owing to his Christian name and to the fact that he was a Fellow of the Royal College of Surgeons of Edinburgh, some people assumed that he must be a Scotsman and therefore capable.

When Morris commenced practice in London the dominant personalities were Erasmus Wilson, Jonathan Hutchinson, and Tilbury Fox. In many hospitals the skin appointment—if there was one—was held by some member of the staff—usually the junior staff—in addition to his ordinary duties, and he had to make his own opportunities for investigation. I have a vivid recollection of a day spent with my old friend, Colcott Fox; we lunched at the National Liberal Club, went to Westminster Hospital at 2 o'clock, and from then until nearly 7 he saw a constant stream of patients and I know that, long before the end, my mental capacity was exhausted! Two or three students looked in at various periods during the afternoon and, no doubt, picked up some crumbs from Fox's sage comments. While much yet remains to be done, the contrast in the present day is very remarkable. It no longer remains a chance whether the person whom circumstances put in charge of the skin department was interested or whether he regarded it as a duty to be discharged in order to get back to his own job. Almost every teaching school in the country is now supplied with a well-trained dermatologist, and the students of to-day get regular, careful, systematic instruction.

My own immediate chief in Edinburgh was Allan Jamieson. He had a career interestingly like that of his friend Morris, for they met at Hebra's feet in Vienna and lit their torches at his altar. They each spent some useful years in general practice in a seaport town—as a residence, I should place Berwick-on-Tweed before Goole—and each, having spent some time in study abroad, settled as a general practitioner in the town where he was educated. In these larger fields they found more scope for their special interests. Their experience and their influence grew, and each played a notable part in forwarding the art of dermatology. Jamieson had at first one—later extended to two—out-patient days in the week and his Saturday clinics were often attended by as many as 300

students. Now the department has a staff of six and 22 beds, and the out-patient department is open daily; it needs to be! There are still lecture demonstrations to as many as 200 students, but the groups for clinical teaching are limited to 15.

If I were to endeavour to allocate the beatitudes among my friends, I would not put Morris among the "meek." But I would put him high among the "peacemakers." The path of dermatology in these 50 years has not been one of uniform smooth progress. There have been obstacles to circumvent and morasses to cross. In the overcoming of all these difficulties Morris's counsel was always wise, and the harmonious relations now existing in our ranks owe not a little to him.

I think my best plan to illustrate the progress of dermatology in the half century is to contrast the position of certain diseases as they were 50 years ago with their position now.

Rodent Ulcer.

I begin with rodent ulcer, with which subject Morris had a very interesting connexion. Of that disease we older dermatologists have memories which one hopes can never again be put on record. There used to arrive at our out-patient departments miserable wretches with half their faces eaten away and stories of how they had for years been carefully applying this, that, or the other ointment. Rodent ulcer has always been a fascinating subject for the young dermatologist and many have done their first original work on the investigation of its pathology. In a moment I shall refer to modern methods of treatment, but these would be of comparatively little avail were it not that increasing knowledge and more abundant opportunities of demonstrating the early stages of the disease to students had resulted in the earlier appearance of cases at hospital. I can remember, in my student days, watching with bated breath the late Prof. Annandale, a plastic surgeon of the very first rank, cutting away extensive ulcers and leaving gaps which seemed to us students impossible ever to fill. Others treated these extensive cases with caustics, but the number successfully treated by any method was small and the patients mostly died a miserable death. One of the most interesting events of the early days of X ray therapy was Sequeira's accidental discovery that rodent ulcer responded to X rays, and many of the later ulcerated cases were cured by this means. Then came the radium treatment, which was quite dramatically successful, as I can testify from personal experience. The interest aroused and the attention drawn to it has had the effect that sufferers are now almost invariably advised of the position and of the right methods of treatment at a stage when the prognosis is almost entirely favourable. If the new hopes of more abundant supplies and more adequate organisation of the use of radium in other forms of cancer are fulfilled, the pioneer success of radium in rodent ulcer should stand as a landmark.

Lupus.

In referring to tuberculosis of the skin, it would be a crime to omit reference to what Morris did for the campaign against tuberculosis in general. His organising powers, his ready pen, and his fearless courage were important factors in the promotion of the campaign against tuberculosis, for he had the happy knack of the journalist in interesting the public in whatever subject he took up. But here I am concerned with tuberculosis of the skin, or lupus—the wolf. I can vividly remember the old days when patients with lupus might attend almost any department of a hospital and were, I fear, generally regarded as very uninteresting cases. In Edinburgh they fell mainly under the care of the surgeons, who had one remedy, or perhaps I might say two: the sharp spoon and the cautery. I remember, as a young man, one of the surgeons to the Royal Infirmary showing to the Medico-Chirurgical Society a case which he had scraped 77 times! The patients were scraped, remained sufficiently long in hospital for healing to commence, and were then discharged, to return six months, 12 months, or 18 months later, worse than they were before, to undergo the same treatment again. I sometimes think that insufficient credit is given to the work of Unna, of Hamburg, who popularised the use of salicylic acid. I use the word "popularised" because I believe Unna was not the first to use it and that the credit for the original observation of its good effects on lupus is due to a Yorkshire house surgeon whom I have never been able to identify. This was the method in vogue and being carried out when I was appointed assistant to Allan Jamieson in 1892. The method still has its place in the treatment of exceptional cases, but its part in advancing matters at that stage was the demand it made for more frequent attendances and closer observation. Of course other caustic methods were in use and some teachers, notably one of my own masters—Prof. Pick, of Prague—used it with great freedom. I saw much of it for he was good enough to say that I worked the thermo-cautery better than any other of his assistants! I was not, however, so impressed with its good effects as to use it much when I had personal charge of patients.

With the introduction of tuberculin arose great hopes for the treatment of lupus, and it was my privilege to be attached to Pick's wards in Prague when that treatment was at its very beginning. Large doses were given at very brief intervals, severe reactions resulted, and I saw many of the cases a day or two later in the pathological department, where I was then working with Chiari. The results were such that only the very stern-hearted could persevere with the treatment, and it soon fell into desuetude. So far as I know there were only two leading dermatologists who did not discontinue it; these were McCall Anderson, of Glasgow, and Neisser, of Breslau. They were never addicts of the large dose, but preferred small doses and long intervals. For some years I treated a large number of patients by that method; many of them benefited, and I think much of the benefit was due to the tuberculin, but I am now convinced that quite as much was due to the fact that the fortnightly injection was introducing more method into the management of the cases, and that of course we did not restrict our treatment to tuberculin alone.

The next great step forward came when Finsen got to work. He began, it will be remembered, with studies on the effects of red light in the treatment of small-pox, and the extension of his experiments, and his application of light in various forms to other diseases, is an instance of how work commenced on purely scientific lines, often leads to important practical results. While the method of Finsen, both in its old and in its newer forms, still is probably the best of all methods of treatment for a few cases of lupus, our greatest debt to Finsen is not the method of treatment but the fact that he taught the need of perseverance. He organised the treatment of lupus and taught us that steady, persistent, daily treatment was essential in the cure of this obstinate disease. The enormous expense of his apparatus hindered its use in most centres in this country, and it had comparatively little trial in America—not because of the shortage of money, but because of the shortage of cases. Many an American visitor has told me that he has seen more cases of lupus in one day in my clinic than he had seen in the rest of his life.

Next came X ray therapy, and few of us can look back on their experience of it without bitter regrets. That the treatment was beneficial in a large number of cases is undeniable, but, as the years went by, the development of epithelioma became so frequent as to lead most cautious people to abandon it. Edinburgh is a sufficiently small centre to enable one to follow up one's cases pretty thoroughly, and I have to put on record that, of 66 cases of lupus treated by Dr. Allan Jamieson and myself in 1902, no fewer than 25 died of epithelioma. No doubt our methods were crude, the means of measuring the dosage were rudimentary and, as the improvement in the lupus was nearly always marked and as no one knew of the

dread after-results, we went complacently on. It may be that improved methods diminish this risk, but for a good many years I have not felt justified in recommending to patients a treatment to which I should certainly not submit to myself. In this matter I may be permitted a personal reference. In these early days I did a good deal of X ray work, and exposed my hands as freely as did all workers at that time. There developed on my hands one of these lesions from which the workers to-day never suffer—or should never suffer—and at a meeting of the old Dermatological Society of London one afternoon I exhibited the lesion to the members. No one was able to identify or explain it, but Morris said: "I don't know what it is, Walker, but if I were you I would have it out!" It was removed two days later by the late Prof. Alexis Thomson, and histological examination showed that it was well that it had been removed! One has a curious sense of pride in having been the first warning of many tragedies; I wish some of my friends had taken the warning!

I would have parted with X ray therapy in lupus with regret were it not that the new method of actinotherapy has proved so much more efficient. Not the least reason for this efficiency is the fact that organisation is essential. No one allows the patient to determine the date of his next visit. I have said elsewhere, I and repeat now that, of all the methods of treatment for lupus which I have tried, none approaches this latest method in efficiency. But organisation still comes first, and I believe that we would not have done so much good to some hundreds of patients had not a system been organised under which all the patients affected with the same disease were seen regularly once a week at the same hour. In July, 1914, at the meeting of the British Medical Association in Aberdeen, I read a paper entitled "On the Need for More Method in the Treatment of Lupus," and in it I mentioned that over 1000 cases had passed through my hands and that I wished I could think that 100 of them had been cured. I need not speak so pessimistically to-day. I have already elsewhere sounded a note of warning against the indiscriminate use of light. We know no more of the late effects of actino-therapy than we did of those of X rays in 1900, but we do know that excessive exposure to light, not only in tropical countries but even in our own, may be followed by epitheliomatous tumours which, unless promptly recognised and treated, may go on to malignancy, and I take this opportunity of repeating my warning.*

In lupus, too, we see the results of the improvement in medical education. We have not got so far as we have in rodent ulcer; students can still see cases which are no credit to somebody, but they do see many more cases at the early stage, and their teachers have the opportunity of pointing out its early appearances, of impressing on them what will be the result of neglect of adequate treatment, and of instructing them in the method of referring necessitous cases to the proper authorities. I take this opportunity of testifying to the helpful coöperation of most of our Scottish authorities in this matter.

Leprosy.

Fortunately in this country nowadays this most dreaded of all infectious diseases of the skin is but a small problem. The law takes no note of it, doctors are under no liability to notify it and, when a case of the disease contracted abroad does come under our notice, we are placed in a very delicate situation. Again I mention Morris who did a great deal, very tactfully, to ease that situation. It is to other countries we must look for records of progress within living memory. In Norway the results of organised supervision have been significantly successful, and it further supports my argument that the discoverer of the bacillus and the Director of Administration were one and the same man, Armauer Hansen. I had the pleasure last week of listening to the lecture here on "Medicine in India" by Mr. Johnstone-Saint. We are just beginning in that country to approach the problem from the modern standpoint. Segregation is older than the Christian era. It is publicity, early diagnosis, and the organised application of scientific methods that are beginning to make some impression on this enormous problem. The Americans, whose organising talents and activities are the envy of us all—though we may jibe at "mass production"—have given a very inspiring lead in the tropical regions where they hold sway.

Venereal Diseases.

The change of attitude towards venereal diseases owes much to Morris, and I recall with interest that it was on his persuasion that I put my name to the famous letter in the *Morning Post* calling on the public and the medical profession to look the facts of these diseases in the face, and that I was the only one to do so among those reputedly more cautious of the inhabitants of this island who live north of the Tweed. It is at least permissible to claim that that letter greatly forwarded the movement which culminated in the Venereal Diseases Act, and a consequent organised attack on an insidious and concealed enemy which was doing much to sap the health of the nation. Among the effects of the Act is the stimulus it has given to research in these diseases, to a better understanding of their far-reaching effects, to much more thorough and satisfactory treatment, and, not least, to the formation of a company of men and women whose zeal and enthusiasm in their work may justifiably be compared with that of those who devote their lives to the mission-field. I know that some of us older dermatologists whose work did not lie in that direction were a little uneasy about the addition, as a branch of dermatology, of a subject to which we had not previously been addicted but, as the representative of a school where there has been no merging, I can testify that nothing but good has resulted from coöperation with the zealot who is in charge of the new branch, and the benefit to our students has been incalculable. In place of an occasional Saturday clinic from an assistant surgeon who, sometimes at least, was obviously pining for the time when, having served his term, he would pass on to his real interest in surgery, our students now receive very thorough, systematic, and practical instruction, and we can guarantee that, when they leave us to make their own way in the world, they *do* know how to handle these diseases. There are, I know, some critics who profess to be disappointed with the present results and who say there is no appreciable diminution in the number of cases reported. This was, of course, to be expected, and has been the experience of similar campaigns against other infectious diseases. But even before the Act, enormous progress had been made. Since the introduction of the Wassermann and other reactions, and of salvarsan by Ehrlich, with all the similar products which have followed it, the greater accuracy of diagnosis and the more efficient treatment mark a striking advance in the management of that group of diseases. Even the straitest individualist must admit that the organisation necessary for the schemes concerned plays the leading part in their success.

Ringworm and Favus.

The epithet *opprobium dermatologicum* ("disgrace to dermatology") once applied to ringworm was well deserved, and the old custom under which mothers brought their children to an out-patient skin department, got a prescription, and might return in a week, a month, six months, or never, thoroughly merited the term. The changes in recent years in the outlook for sufferers from these fungus diseases are another testimony to the value of coöperation between the scientist, the clinician, and the organiser. When I was working with Pick in 1890 he was endeavouring, with but moderate success, to cultivate the fungus of ringworm. The hobby, as it then appeared, became more general, and workers used to exchange cultures

* Since I delivered this lecture there has reached me a copy of an address delivered by Dr. George McKee of New York which contains a similar warning.

just as orchid fanciers do! There did not seem to be much practical value to come out of it, and the pessimists and the cynics said many cutting things, but it directed attention to the subject and was one of the many to which Sir Malcolm devoted his energies. His book, "Ringworm in the Light of Recent Research: Pathology, Treatment, Prophylaxis," published in 1898, was an important contribution. But the most zealous organiser had a hard row to hoe! The disease was regarded as a nuisance but, as it did small harm to health, was but little considered. I heard from my mother that, when she was 10 years old, 87 years ago, she was discovered to have ringworm. She was removed from the better-class school which she was then attending, but attended, for over a year, without any difficulty being raised, what she described as the "Keelies'" school in Stockbridge! I think we owe the immense change which has come over the situation mainly to two things: the inspection of school-children, and an action of the Russian government which sent Jews and favus from Russia to London many years ago. We were painfully familiar with favus in Edinburgh, but it was the Russian immigrants who opened your eyes to its seriousness in London. The problem was almost at once realised, and the organised arrangements made at the London Hospital have restored favus in London to its old place of a curosity. One can look back from the now universal and universally approved inspection of school-children to the attitude with which it was received when it was introduced in the first decade of this century. Some of the older inspectors can still amuse us with stories of the crowds of angry mothers who waited outside the doors of the school to see the inspector. An immense amount of feeling was aroused; once, breaking a journey between London and Edinburgh to spend a night with an old assistant in the Midlands, I was invited to attend a public meeting, which was to be held that evening, with the vicar in the chair, to protest against this interference with the liberty of the subject. Some of you may be familiar with the local patriotism of our border towns; the spirit of competition between them affects everything, and when the inspector reported that the percentage of "dirty heads" in the schools in Burgh A was 54, local feeling was aroused, not at the figures, but at the fact that the same inspector reported that in Burgh B it was only 48!

After a good deal of persuasion the Edinburgh School Board established, in 1912, a special school for children affected with ringworm and favus. I remember very vividly the storm which its opening aroused. The columns of our evening papers were filled with letters of protest. It so happened that for convenience the school was established close to the Royal Infirmary and accidentally it happened to be near two of our largest public schools for boys. The correspondents drew attention to the risks that the pupils of these schools would run, and, with that tendency of newspaper correspondents to follow the mentality of the auction room, higher and higher objections were raised until one imaginative person warned the university that the risk to the students attending the infirmary would be so great that parents in the colonies would no longer send their sons to Edinburgh. When the schools was opened in January, 1912, about 60 pupils were admitted, most of whom had been absent from school for periods varying from a few months to four years; several had never been to school, amongst them two boys 12 years old. The increasing number of cases—I draw attention to this—necessitated enlargement of the school, and three years later the next-door house was acquired and accommodation provided for 160 pupils. In the session 1920–21 290 pupils were discharged cured; the greatest number in any one session. In 1924 the numbers began to decrease rapidly and in 1926 the staff was reduced to its original number of three teachers, eight having been at one time necessary. Over 2300 children have passed through the school and now the majority of those attending are under school age. The detailed figures are instructive: 1912, 67; 1913, 97; 1914, 88; 1915, 143; 1916, 260; 1917, 262; 1918, 347; 1919, 381; 1920, 430; 1921, 402; 1922, 351; 1923, 344; 1924, 265; 1925, 214; 1926, 143; 1927, 117; 1928, 109. To-day there are only 20 pupils in the school. I have given details of this, firstly because it was under my own direct supervision, and secondly because it points the useful lesson that organised attention directed to such a disease invariably, at first, seems to increase the number of cases. What it does is to bring them to light; then a level is reached, and then the number begins to decline. It is of interest to know that the educational level attained was higher than the average in the schools under the authority, probably owing to the fact that the children got their dinner in the school and that the classes were smaller.

More striking still is the school's record of favus, a disease which used to provide from 20 to 40 new cases annually in the infirmary skin department; many of these, of course, were adults and "incurable." A year or two ago I asked our Central Education Authority to give me what information they could about the existence of the disease in Scotland and, after careful inquiry through their official channels, they reported to me that in the whole of Scotland there were 15 cases and none of them in Edinburgh. This success could not have been attained had it not been for the discovery that in X rays we had a remedy which, properly used, could be trusted to remove all the hairs from the affected scalp—diseased as well as healthy. I do not remember who was actually the first to use the rays in ringworm, but it is undoubtedly to Sabouraud that the general adoption of the method was due. Here, again, we owe an advance to the combination of laboratory and clinical methods. It was through scientific study of the fungus that the way lay to the cure of the disease. When one reflects that in the past, even in well-organised institutions, the average time required to cure the disease was over three years, and that it is now reduced to less than three months, the dermatologists need no longer smart under the gibes of their critics but may point to the thousands of years of education that have been saved in a little over 20 years.

It looks as if the X ray treatment of ringworm might, in its turn, have to give way to the thallium method. The history of thallium as a remedy is interesting. It has long been known that its administration was followed by alopecia, but it did not occur to anyone that it might possess such selective powers as to confine its action to definite areas, and it is indeed a very remarkable fact that it does so. Attempts were made to utilise its depilatory action in the treatment of ringworm quite early in this century, but were discontinued on account of the severe toxic symptoms produced. It was only in 1918 that Cicero published the results of his successful use of it in a series of cases. Since that date it has been quite extensively employed, and there are now records of over 3000 cases in which it has been proved efficacious. In the ringworm school in Edinburgh it has proved very satisfactory in shortening and simplifying treatment. The method has met with an unfortunate set-back on account of a recent calamity. The moral I draw from that is that it is unfortunate that the metric system used in the British Pharmacopœia of 1914 and long in use in all the scientific branches of medicine is so slow in spreading into practice.

While we have been prevailing in our struggle with ringworm of the scalp, another form of ringworm has made great strides in this country. I allude to the fungus infection of the skin long known in the East as dhobi itch—epidermophytosis. Many people think that the prevalence of this is a sequel of the war and, indeed, many brought home the infection with them from the East. But it had made considerable progress before the war, particularly wherever collections of young men were gathered together. The very slight symptoms which it produces are largely responsible for its spread. A little irritation of the skin of the

hands or between the toes does not always send the patient to a doctor for advice; it is only when the symptoms are more severe that advice is sought. Nevertheless, the condition is all the while infectious, and I am sure that cases are becoming increasingly numerous. In a certain proportion of cases the nails become infected and I know of no fungus infection which one approaches with more respect than fungus infection of the nails. We have gone a long way to conquering ringworm of the scalp by organisation. I plead for its application to this condition! If an hour were set apart for a clinic for this malady alone I should look for the same measure of success as has been achieved in lupus, in ringworm of the scalp, in favus, and in diabetes. I think the most promising feature of the campaign against asthma is that cases are to be collected in clinics and studied in groups.

Scabies, Impetigo, and Pediculosis.

The teacher of dermatology may, from time to time, regret the diminution of his opportunities for teaching students to become familiar with what used to be very common diseases. This is particularly true of the commonest diseases, and there is no doubt that the teacher of to-day does not have the same superabundant opportunities of demonstrating cases of scabies, impetigo, and pediculosis as his predecessors had. In my own days it was almost always possible to demonstrate to students the close relationship between impetigo and pediculosis capitis. Thanks to school inspection, all these diseases have markedly diminished. They are still numerous, but I venture to prophesy the advent of a time when the teacher of dermatology will welcome the appearance of a really good example of impetigo to demonstrate to his students.

Urticaria, Erythema, Dermatitis, and Eczema.

With one exception, all the diseases I have dealt with fall obviously into the preventable category, for in all of them the cause is recognisable and determinable. But there remains a great mass of disease where the progress recorded, marked though it be, is not so dramatically presentable as in those already dealt with. To only two groups of these diseases have I time to refer. The first comprises the conditions known as urticaria (nettlerash), and erythema (redness), while the second includes the vast number of affections of the skin which, according to our fancy, we label "dermatitis" (inflammation of the skin), or "eczema," which is the Greek word for an eruption. It must be conceded that the labelling of a patient's ailment with one or other name does not greatly help, and it has become more and more evident that it is the cause that is important, and not the name. The one group, speaking generally, has characteristics which suggest that it arises from some internal cause, and the other, also speaking generally, rather suggests external irritation. It is along the lines of concentration on the possible cause, rather than on the appearance of the eruption, that marked progress has been made in these 50 years. It had long been known that the ingestion of certain foods—I merely instance oysters, lobsters, strawberries, and cherries—was followed in certain individuals by an outbreak of nettlerash. Some of the older authorities, in their condemnation of all fish and of all fruits, rather obscured the truth, but nevertheless there is evidence in some of their writings, and perhaps most of all in the works which, like Morris's, went through several editions, of something instinctively suspected but beyond their ken, a spirit like that of the old Athenians, who erected an altar to the Unknown God. "One man's meat is another man's poison" is an old proverb, and it is in the application of this that advance has been made. Even the oyster, perhaps the most notorious sinner, only affects a small percentage of humanity, and as one goes down the list the percentage decreases. But the list of substances to which some people react is being daily lengthened, and now that outbreaks of urticaria have been traced even to milk, it is obvious that the matter is one of importance. It is quite often possible, by starving a patient for a few days and then adding one article of diet after another, to alight on the cause, but this is often a very slow process. The hunt for the peccant article has been made much simpler by the introduction of the cutaneous tests. By their means, the sensitiveness of a particular individual to a particular substance can be at least suggested, and much time thereby saved. Some people, in my judgment, have adopted these tests too enthusiastically and expect that it will be possible to relate every case of urticaria to its cause if one only perseveres long enough. The relationship between urticaria and asthma, long remarked but little understood and not infrequently scoffed at, has been clarified by the demonstration that certain substances may produce one or other type of reaction. I do not wish to be thought to belittle the enthusiastic cutaneous tester; it is worth many hours of work if one can free a patient from a very troublesome symptom by simply advising him to avoid, in future, Findon haddock, some particular variety of cheese, tomatoes, chestnuts, or damson jam. There are other causes of urticaria than foods, and these must be sought with the same diligence.

I next come to that conglomerate assemblage of reactions of the skin which goes by the name of eczema. For two or three centuries authors have sought for a satisfactory definition. The fact is that it is impossible to define a condition which may be due to any one of hundreds of causes. It is rather remarkable that so many who sat at Hebra's feet did not carry further his researches into external causes! Their search was too often directed to some other organ of the body; eczema, it was held, had its manifestations on the skin, but the attitude was to seek for its cause anywhere rather than in the skin itself. It is to some extent unfortunate that Hebra devoted so much attention to the reaction produced on the skin by one or two irritants (notably croton oil) and assumed that all irritants would produce the same reaction. It is to the recognition of the fact that different irritants may produce apparently similar reactions in some persons, and that the same irritant may produce different reactions in others—in short, to a wider appreciation of the importance of idiosyncrasy—that we owe most of our recent advances. The skin and the stomach are wonderfully alike in this respect: there are a few persons who boast that they can eat anything, but most of us are aware that there are some things which agree with us better than others. So it is with the skin. There are very few who have a skin that nothing will irritate, and very few chemicals, using the word in a wide sense, which will not irritate some skin if brought into contact with it. Fifty years ago bakers' itch, bricklayers' itch, and washerwomans' itch were familiar. The work of my friend, Dr. Prosser White, on the industrial diseases of the skin shows an imposing list of over a hundred varieties, and we discover new ones every year. I agree with Hartzell when he says: "Many, if not most, of the cases of so-called acute eczema are, in fact, due to some plant, dye or drug with which the patient comes in contact." The search for the cause in a suspected case is an enthralling pursuit. I learned recently from Sir Harold that his father and I shared a common zest for those cases that required something of the detective instinct of Sherlock Holmes. Perhaps the most intriguing cases one has to deal with are those connected with the vegetable kingdom. The most familiar vegetable poison in this country is the Chinese primrose. It may be familiar, but it is astonishing how many cases one sees in enthusiastic floriculturists who are entirely ignorant of its irritant effects. No treatment, however skilfully directed, is of much use when the patient is innocently and ignorantly exposing himself to a noxious irritant.

Equipment.

The dermatologist of to-day has a vast armoury compared with that of his predecessor 50 years ago. He has scores of new weapons; some of them are very potent, and many are double-edged. Chemical

and bacteriological warfare is waged against the germs which infest the skin. New remedies are showered upon us with bewildering frequency, and, if many of them have but a short career, the good ones remain. The use (and no less the abuse) of vaccines is of great importance, but they require judgment and experience in their administration and their value is best tested and estimated by those whose knowledge and practice is not limited to these new remedies. I would counsel the younger generation not altogether to neglect old remedies and the principles which lie behind their use; to clean the skin, to keep it at rest, and to let nature do the cure, is as important as ever it was. I would not give up the use of the starch poultice (which Allan Jamieson learned to use in Paris and spent all his active life in advocating) for any dozen vaccines.

It is recorded of Hughes Bennett, whose name I mentioned earlier, that he treated all his acute cases with weak alkaline soaks and all his chronic ones, as Noah did the ark, with pitch within and without. It takes years of experience to understand exactly when and how to use tar, but it and its derivatives remain among the most useful of applications.

The older dermatologists perhaps took human nature more into consideration than do some of their successors. Possibly I am speaking from the maturer mind, and human nature has changed as well as remedies. I have often followed, with benefit to the patient, the spirit of a bit of advice Malcolm Morris once gave me; we were discussing the advantages and the rather manifest disadvantages of chrysarobin in the treatment of alopecia areata and the importance of interesting the patient in the treatment to be used. Morris said: "Instead of the conventional ointment or lotion I sometimes find it helpful in this condition to advise patients to cut a lemon in two, to sprinkle the cut surface with Goa powder and rub the part. If I am anxious to make the patient specially attentive to the treatment I advise him that limes are even better than lemons."

If I were to endeavour to find an explanation for the advance I would put it on four grounds:—

1. The improvement in school education; we get better-trained students than our predecessor did. I do not refer to the geniuses of the past or present, but to the average level.

2. The marked improvement in medical education and, not least, the introduction to what our American friends call the fundamental subjects. The students of to-day are far better grounded in chemistry, physics, biology, physiology, pathology, bacteriology, and pharmacology than we were, and are a more receptive soil for sowing the seed of the advances in medicine and surgery and their branches.

3. Next I would put research; everyone recognises the importance of research in every branch; in every laboratory and in every large hospital it is constantly going on, either as some special research or as an integral part of properly done routine work. Not the least important factor in the advance is the increasing combination between the clinician and the laboratory worker. I have no sympathy with and little belief in the assertion that these are two rival camps. Here and there it may be true that a narrow-minded individualist in a laboratory regards all other than laboratory workers as mere children at play, and here and there clinicians are still prepared to back their "clinical instinct" against any laboratory finding. But these are exceptions, and in all active centres throughout the world there is closer and closer combination between the two branches and, as the results continue to show the advantages of coöperation, it may be prophesied that the exceptions will get fewer and fewer.

4. Then there is coöperation. Special departments no longer work in little water-tight compartments. They touch, on the one side, their medical colleagues on the staff, and on the other those public authorities who are responsible for the health of the community. I have not, I think, stinted my expression of appreciation of what the community owes to the inspection of school-children. School-children are not the only class who would benefit from closer coöperation and organisation. Not long ago I had the pleasure and satisfaction of participating in an organised inquiry into a disease of the skin which had been known for over half a century to attack certain workers in the shale oil industry. The combination of the Home Office, an exceedingly capable local doctor, and an expert, was able to suggest a method which, in a few months, practically abolished a condition which meant suffering to many and death to some. In the reorganisation of local government, now in train, there is much hope that such methods will spread.

The dermatologist of the future has a wide field before him. He must come to it well equipped. Some used to argue that he should approach it through ten years of general practice, as Malcolm Morris and Allan Jamieson did. Here is a description of his qualifications from America: "He must of necessity be an internist (physician) and pathologist—if such a thing is possible, a better-trained internist than the internist himself. He must be a bacteriologist, a physiologist, an embryologist, and a physicist." That is the American ideal. Translated into our more practical form, it means that he must be thoroughly trained in all these subjects, and be capable of appreciating the work done by the experts in each and of applying such of it as is applicable to his own special work.

I close, in the spirit of what I have tried to make the theme of this lecture, with a quotation which I believe would have been appreciated by the man whose memory we recall to-day. As befits the son of a Scottish manse, I take it from the Bible and I think you will agree not inappropriately, from the Book of Job. There, in verses 15 and 16 of the twenty-ninth chapter, you will find these words: "I was eyes to the blind, and feet I was to the lame. I was a father to the poor, *and the cause I knew not I searched out.*"

A CONTRIBUTION TO THE STUDY OF RENAL GLYCOSURIA.

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When a reducing substance is found in the urine two questions naturally arise: (1) Is the reducing substance glucose? (2) Is the patient affected with true diabetes mellitus? To the first question a satisfactory answer can usually be given by carrying out the phenylhydrazine and fermentation tests for glucose. To the second question an affirmative answer may be given when the history and symptomatology are sufficiently characteristic; a negative answer, on the other hand, can only be given after careful investigation.

Glycosuria is said to be relatively uncommon and although its incidence may possibly vary in different classes of society, there can be little doubt that the excretion of glucose in the urine is more common than is generally supposed. This may be partly due to the not uncommon practice of requesting or accepting for routine examination a morning specimen of urine—that is, one passed after several hours' fast. It is obvious, therefore, that the accidental discovery of glucose in the urine of a patient who has no definite diabetic symptoms demands a careful investigation of the cause of the abnormality, since it is well known that a certain proportion of glycosuric patients are not true diabetics.

Of the conditions included in the group of non-diabetic glycosurias an important one is renal glycosuria, now recognised as a distinct clinical entity. A considerable amount of literature has already appeared on the subject, and various other names have been applied to this interesting anomaly, names such as "diabetes innocens," "glycosuria

without hyperglycæmia," and "negligible glycosuria," all of which may be regarded as synonymous.

Joslin[1] defines renal glycosuria as "a persistent glycosuria which is relatively independent of the diet, and in which there is absence of hyperglycæmia as well as of the symptoms of diabetes." Graham,[2] in 1916, described two types: the common one, in which less than 10 g. of sugar were excreted daily, and another type in which 10 to 30 g. were excreted. In 1923 he described another type[3] in which no sugar is detected in the urine when the patient abstains from food for a short time, but sugar is excreted when carbohydrates are eaten. This type he regarded as a link between normal people and patients with a typical renal glycosuria. Many other cases, of varying type and severity, have been published. Leyton[4] records 18 cases of which 7 had histories of glycosuria averaging 18 years. Garrod,[5] MacLean,[6] and Graham,[2 3] record numerous cases, and several papers have appeared, chiefly in American journals, describing cases in which glycosuria only appeared after a meal (Goto,[7] Strouse,[8] Murlin and Niles,[9] Lothrow,[10] John,[11] Goto and Kuno[12]).

Normally the kidney does not excrete glucose so long as the concentration of blood-sugar remains below 0·18 per cent. and this figure is generally accepted as the normal renal threshold for glucose. In renal glycosuria the threshold for glucose is lowered; it may be slightly, moderately, or greatly below the normal, and the kidney continues to excrete glucose so long as the blood-sugar concentration remains above the threshold level. Persistent glycosuria is not, therefore, a sine qua non in the diagnosis of renal glycosuria; and furthermore, in a certain number of cases the glycosuria is not relatively independent of the diet, but is, in reality, dependent upon it. Joslin's definition, therefore, is only applicable to certain cases. An important question thus arises, whether the different types of renal glycosuria are merely varying degrees of

FIG. 1.

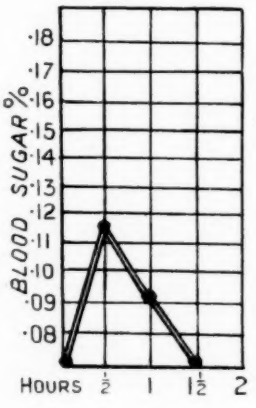
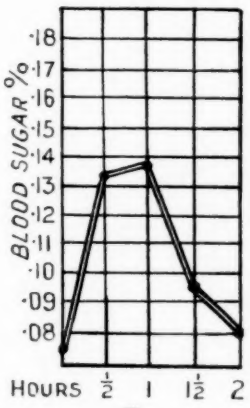


FIG. 2.



one type of abnormality, the variation depending upon the degree to which the kidney leak-point is removed from the normal, or whether they represent abnormal states differing in nature and ætiology.

It is generally stated that renal glycosuria is more or less harmless and requires no treatment. The study of the condition, however, brings to light certain problems which demand further elucidation. These problems have occurred to me in the course of a personal investigation and will be discussed after a brief description of six cases.

Clinical Histories.

CASE 1.—Male, aged 39, complained of feeling "overstrung" and nervous, due in his opinion to overwork. A general physical examination proved negative, with the exception of a slightly increased blood pressure, the figures being: systolic 150, diastolic 85. The Wassermann reaction was negative. The urine, however, contained a fair amount of glucose. Further investigation showed the morning urine (fasting) to be sugar-free, while the urine passed an hour and a half after a mixed meal contained a fair amount of glucose. A glucose tolerance test (50 g. of glucose) showed the blood-sugar curve to be not only well within normal limits, but abnormally low (Fig. 1). At the beginning of the test (fasting) the urine was sugar-free, while at the end of the test there was a moderate glycosuria.

CASE 2.—Male, aged 25, complained of general weakness, irritable temper, and headaches of four months' duration. A general physical examination proved negative. The urine, however, was found to contain glucose. A glucose tolerance test (50 g. of glucose) showed the blood-sugar curve to be well within normal limits (Fig. 2). At the beginning of the test (fasting) the urine contained a trace of glucose, while at the end of the test it contained 2 per cent.

CASE 3.—Female, aged 39, complained of attacks of tinnitus and giddiness accompanied at times by nausea

FIG. 3.

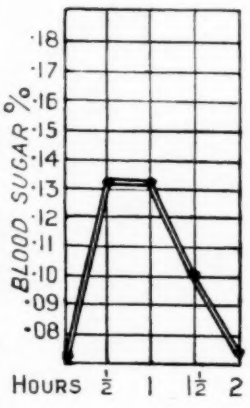
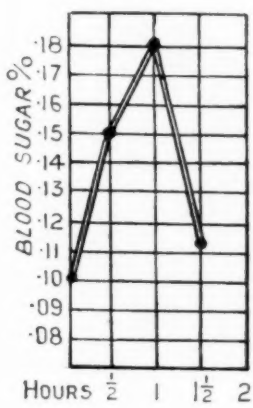


FIG. 4.



and vomiting. She had been examined by an aurist, who formed the opinion that the symptoms were not due to any aural disease. The symptoms first appeared after a long period of harassing work and mental strain. The patient was debilitated and neurasthenic and her urine was found to contain a small quantity of glucose. Further investigation showed the morning urine (fasting) to be sugar-free, while the urine passed an hour and a half after a mixed meal contained a moderate amount of glucose. A glucose tolerance test (50 g. of glucose) showed the blood-sugar curve to be well within normal limits (Fig. 3), but at the end of the test the urine contained a small quantity of glucose. In this patient the troublesome symptoms disappeared after a prolonged holiday and it was then noted that a carbohydrate meal failed to produce glycosuria.

CASE 4.—Male, aged 48, complained of headache, insomnia, weakness, and loss of weight. He was much engrossed in business and believed his symptoms to be due to worry. Examination showed a moderate degree of arterio-sclerosis. The systolic blood pressure was 148; the diastolic 90. The Wassermann reaction was negative. The urine was found to contain a moderate amount of glucose. Further investigation showed the morning urine (fasting) to be sugar-free, while the urine passed two hours after a carbohydrate meal contained 1·3 per cent. of glucose. A glucose tolerance test (50 g. of glucose) showed a normal curve (Fig. 4). At the beginning of the test (fasting) the urine was sugar-free. Half an hour after the administration of the glucose the blood-sugar had risen to 0·15 per cent. and the urine contained 0·63 per cent. of glucose. At one hour, when the blood-sugar had risen to 0·181 per cent., the urine contained 1·18 per cent. of glucose. At two hours the blood-sugar had dropped to the starting level of 0·1 per cent. and the urine then contained only a trace of glucose.

CASE 5.—Male, aged 54, was rejected at a life insurance examination on account of glycosuria, the urine being found to contain 0·9 per cent. of glucose. He was a well-developed, healthy looking man and felt in excellent health. A morning specimen of urine (fasting) was found to be sugar-free, while the urine passed two hours after a mixed meal contained a definite but small quantity of glucose. A glucose tolerance test (50 g. of glucose) showed a normal

curve (Fig. 5), but one hour after the administration of the glucose, when the blood-sugar had reached a level of 0·168 per cent., the urine contained 1·25 per cent. glucose.

CASE 6.—Male, aged 40, was rejected at a life examination on account of glycosuria. He appeared to be in perfect health. A glucose tolerance test (50 g. of glucose) showed a curve suggestive of early diabetes, but with a definitely lowered renal threshold (Fig. 6). At the beginning of the

FIG. 5.

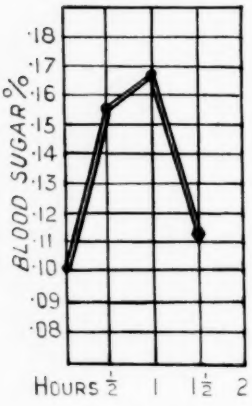
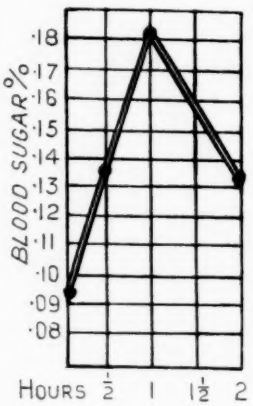


FIG. 6.



test (fasting) the urine was sugar-free. Half an hour after the administration of the glucose the urine contained 0·9 per cent. glucose although the blood-sugar had only reached 0·137 per cent. The highest level of blood-sugar obtained during the test was 0·182 per cent. at one hour, yet the urine at one and a half hours contained 6·6 per cent. of glucose.

In these six it will be noted that in one case (Case 2) the morning urine contained a trace of glucose, while in the other five the morning urine was sugar-free. They would all appear, therefore, to belong to that type of renal glycosuria in which the glycosuria only appears when carbohydrates are eaten.

Cause of the Lowering of the Renal Threshold in Certain Individuals.

MacLean[13] in 1923 stated that the exact condition of the kidney which caused renal glycosuria was obscure, and recently he has expressed the opinion that the problem is still unsolved. There are, however, certain interesting observations of other investigators which are worthy of note. Hamburger and Brinkman,[14] experimenting on dogs, found that the kidney threshold for glucose could be altered by varying the amounts of calcium and potassium in the perfusing fluid, an observation which raises the question whether the lowering of therenal threshold is dependent upon abnormalities in the composition or physical characters of the blood. This interesting hypothesis has been studied by Cammidge and Howard,[15] whose observations tend to confirm this view, and they accordingly define renal glycosuria as "a condition in which there is excretion of sugar in the urine that is relatively independent of the diet and occurs in an apparently healthy person whose blood is found to contain a subnormal or normal percentage of sugar no matter when it is examined, and shows an absolute and not merely a relative reduction in the proportion of calcium." In their experiments they found that the condition could be controlled, for some time at least, by the daily administration of calcium and parathyroid. In Case 1 of my series no special treatment was adopted when the abnormality was discovered. Seven months later the urine, passed two hours after a mixed meal, was found to contain 2 per cent. of glucose. The patient was then advised to take each day grs. 22½ of calcium sodium lactate and gr. 1/10 of parathyroid. Three weeks later there was no reduction in the glycosuria and after five weeks the urine still contained 1·1 per cent. of glucose two hours after a test-meal. In Case 4 the administration of calcium lactate and parathyroid appeared to bring about a reduction in the amount of glucose excreted. The effect, however, was only temporary, as the glycosuria increased when the drugs were discontinued.

Possible Relationship to Disturbances of the Vegetative Nervous System.

The possible relationship between renal glycosuria and disturbances of the vegetative nervous system has been studied experimentally by several Continental workers, who have approached the subject by investigating the nature of phloridzin glycosuria. It is well known that the administration of phloridzin (a glucoside), orally or by injection, results in the excretion of glucose by the kidneys. The glycosuria thus produced is at least considerable and may be enormous. The interesting point is that it is associated with a hypoglycæmia, so that the glucose is excreted with a lowered renal threshold. In that respect it is analogous to ordinary renal glycosuria. But the full explanation of the action of phloridzin is as yet unknown, since the glycosuria produced by it continues on a carbohydrate-free diet and when the liver is empty of glycogen. One view is that the kidney simply splits off and excretes sugar from the glucoside phloridzin, which re-combines with the blood-sugar, thus forming a cycle. On the other hand, it is held by some authorities that phloridzin acts by antagonizing the influence of insulin.

Zuntz[16] demonstrated many years ago that the injection of phloridzin into the renal artery of a dog resulted in the immediate elimination of sugar from the injected kidney, while the other kidney did not excrete sugar until a definite interval had elapsed, and then only in much smaller quantity. From this he concluded that phloridzin glycosuria was of purely renal origin. Later investigators, however, have raised the question of whether phloridzin acts directly on the renal cells or through the medium of the nervous system. It now appears to be definitely established, from the experiments of a great number of observers, that individuals with an increased irritability of the vegetative nervous system show an increased sensitiveness to phloridzin. Caro has demonstrated this in Graves's disease, and Grote[17] likewise has pointed out that individuals suffering from abnormalities of the vegetative nervous system, and above all from so-called sympatheticotonia, show an increased sensitiveness to phloridzin. Dünner and Mecklinberg[18] have also demonstrated that the parasympathetic exercises an influence on phloridzin glycosuria. They show that the parasympathetic depressors, calcium and atropine, have a restraining influence on phloridzin glycosuria, while the parasympathetic stimulators, potassium and pilocarpine, have the opposite effect. Goldberg[19] has studied the influence of sympathetic and parasympathetic depressors on phloridzin glycosuria and finds that the subcutaneous injection of ergotamine (a sympathetic depressor) or of atropine (a parasympathetic depressor) controls the glycosuria following phloridzin administration. When both drugs are injected together the controlling influence is more marked. Goldberg concludes, as a result of these experiments, that phloridzin glycosuria depends upon vagal and sympathetic stimulation, and that, since phloridzin glycosuria is a representative of the renal glycosurias, the dependence of ordinary renal glycosuria on similar disturbances of the vegetative nervous system is established.

The hypothesis thus formulated is interesting and attractive and may be the probable explanation of a certain number of cases. Four of my patients sought advice on account of nervous symptoms which might reasonably be attributed to disturbances of the vegetative nervous system. If increased irritability of the vegetative nervous system can influence the level of the renal threshold for glucose we may find herein an explanation of the view that

renal glycosurics have a deficiency of blood calcium. Chiari and Fröhlich[20] have shown that the excitability of the vegetative nervous system is markedly augmented by diminishing the calcium content of the body. It is probable, therefore, that the therapeutic administration of calcium to a renal glycosuric may produce a beneficial effect, not merely by altering the chemical and physical characters of the blood, but by diminishing the excitability of the vegetative nervous system.

In the present state of our knowledge it is not possible to state definitely what is the actual cause of the lowering of the renal threshold. There may be more than one cause, but it will be readily admitted that the hypothesis of disturbances of the vegetative nervous system marks a distinct advance in the study of a difficult problem.

Symptoms due to or Associated with Renal Glycosuria.

Cammidge and Howard have found that the subjects of renal glycosuria are easily tired and are incapable of prolonged exertion, probably owing to the low proportion of circulating sugar. Other writers describe various symptoms such as nervousness and debility. Four of my patients sought advice on account of definite symptoms of ill-health, symptoms mainly of the nature of functional disturbances of the nervous system. On the other hand, it is well known that renal glycosuria is frequently discovered in individuals who are apparently in excellent health.

Generally speaking the condition is regarded as permanent and cases have been recorded in which the glycosuria has persisted for many years with no apparent effect on the general health. In Case 3 of my series the patient was debilitated and suffered from various nervous symptoms. After a prolonged holiday the general health improved greatly, the nervous symptoms disappeared, and it was then found that a meal containing a good proportion of carbohydrate failed to produce glycosuria. In Case 6 also, in which the kidney leak-point for glucose was found to be below 0·138 per cent. in November, 1924, the blood-sugar curve suggested that the patient might be a potential diabetic. Recently, however, his family doctor reported to me that the patient was in good health and that a meal containing bread and sugar had failed to produce glycosuria. It is possible, therefore, as has been suggested by others, that there may be cases of renal glycosuria which are of a temporary nature.

Renal Glycosuria and True Diabetes.

Some writers sound a warning note regarding these cases, and suggest that they may develop true diabetes mellitus. It is not clear on what grounds this assumption is made. Renal glycosurics are probably just as likely to develop true diabetes as normal people are, but there is no evidence that they are more liable. A few cases of diabetes mellitus have been recorded in which the renal threshold was low. Shapland[21] reports one case in which the diabetes was complicated by gall-stones. Cholecystectomy produced a remarkable improvement in the diabetic condition, but had no apparent effect on the level of the renal threshold. Voigt[22] reports one case in which a fractional gastric analysis revealed a total absence of free hydrochloric acid. In his patient, the administration of dilute hydrochloric acid with meals, begun after three weeks of active anti-diabetic treatment, had no effect on the glycosuria. Lawrence,[23] in a recent paper in which he describes eight cases of diabetes mellitus with renal leak-points lying between 0·08 and 0·15 per cent., expresses the view that "there seems no reason to think that the combination of diabetes mellitus with a lowered renal threshold is not a mere coincidence." So far, then, as our present knowledge goes, there is no known relationship between renal glycosuria and diabetes mellitus. Renal glycosuria has been known to persist for many years without any apparent deterioration in health. Whether the condition is liable to variations or fluctuations, or can be in any way influenced by disturbances in the general health, are questions which can only be answered by the repeated examination of a large number of cases over a prolonged period.

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SELECTIVE ACTION OF X RAYS ON THE BLOOD CELLS OF THE CAT.

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THE changes in the cells of the blood which follow exposure to heavy doses of penetrating X rays have been studied in the cat. The entire body of the animal was irradiated at 57 cm. distance for varying periods, the spark gap being 10 cm. between spheres 5 cm. in diameter, 1 mm. of aluminium being the filter. In our experience if the duration of the irradiation is 75 minutes or over, death invariably results within 5 to 12 days; with exposures of 60 minutes a proportion of the animals survive; if the period is less than 60 minutes practically all the animals survive. In the experience of this laboratory, it takes 150 minutes' exposure to X rays of this type to kill, in vitro, the cells of Jensen's rat sarcoma (i.e., this dose equals 1 rad.).

The White Cell Count.

White counts made on a series of over 30 animals brought into the laboratory showed a wide range of variation, from 6000 to 35,000 per c.mm.; the usual range was from 9000 to 26,000. Considerable day to day fluctuations may occur in the same animal (see Figs. 1 and 2); large variations occur during the course of each day, commonly less than 5000, but sometimes as much as 9000. The differential count usually shows that the polymorph cells exceed 60 per cent., but sometimes the lymphocytes may preponderate.

Effects of Irradiation.—(1) The total white count may show a transient increase during the period of irradiation, but the figures obtained may be within the normal range of variation for the animal. The count then falls, as a rule steadily, sometimes with a slight transient recovery. On the third to the fifth day the white cells may have completely disappeared from the circulating blood or may be reduced to a few hundreds per c.mm. Following exposures of 75 or 60 minutes' duration this intense leucopenia persists till

death, which occurs 3 to 9 days later (Fig. 1). In animals which survive a 60 minutes' exposure, some recovery in the white count occurs on about the eighth or ninth day and this continues slowly with irregular fluctuations. With doses of 30 minutes, the total white count does not usually fall below 1000 per c.mm. and signs of recovery are shown early (Fig. 2).

(2) The lymphocytes decrease from the onset of the irradiation; the fall continues as a rule steadily, occasionally with a slight temporary recovery. On the second or third day the lymphocytes have practically completely disappeared from the blood, even with doses of 30 minutes (Figs. 1 and 2).

(3) The polymorphonuclear leucocytes may show a transient initial increase during the irradiation. The initial changes in the total white count depend on the extent to which this inconstant increase in the polymorphs outweighs the regular decrease in the lymphocytes. The polymorphs then decrease, but more gradually than the lymphocytes; on the third to the fifth day the polymorphs may be reduced to a few hundreds or less and constitute 95 per cent. or over of the total count. With doses of 30 minutes the polymorph count does not fall below 1000 per c.mm., and tends to recover more rapidly than the lymphocytes (Fig. 2).

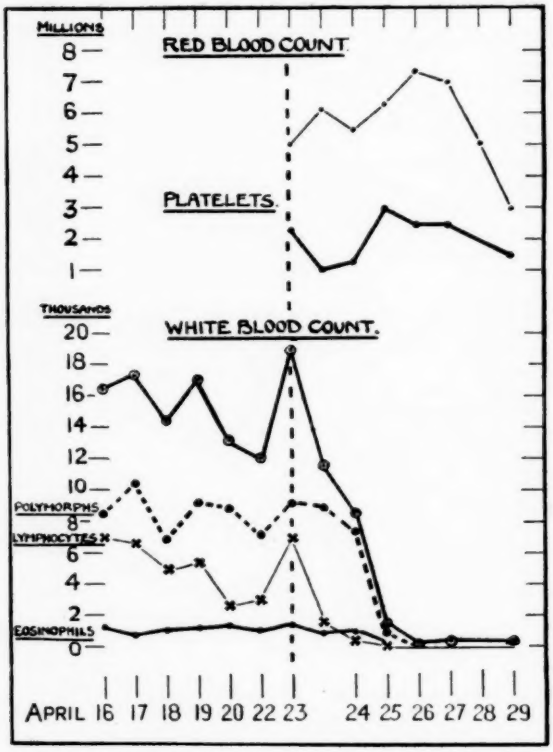
The Red Cell Count.

The range of variation noted in the series of animals studied was 5 to 13 million per c.mm., the usual range being 7 to 9 million. The range of fluctuation in any individual animal is commonly 1 million, and may be as high as 3 million.

Effects of Irradiation.—The immediate effects are variable. There may be little change apart from the expected daily fluctuations (Fig. 2), or the count may rise for some days (Fig. 1), or show a steady mild decline (not illustrated). An increase in the total count is frequently associated with the appearance of many microcytes in the circulation. The red cells usually show crenation, poikilocytosis, and anisocytosis. With fatal doses a marked anæmia usually develops several days before death (Fig. 1). That this may be due to hæmolysis is suggested by the greenish tinge of the plasma which frequently gives a positive Fouchet reaction and a positive indirect van den Bergh reaction for bilirubin. The direct van den Bergh reaction in these cases was always negative. The acute anæmia may, however, result from widespread hæmorrhages.

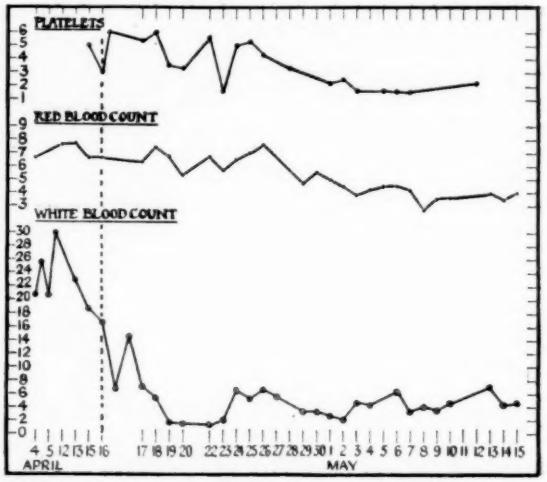
With non-fatal cases (Fig. 2) the development of the anæmia is more gradual, but is usually definite after 10 to 15 days. The count remains low for about two weeks and then recovery slowly sets in.

FIG. 1.



Cat 49, X rayed for 60 minutes at point indicated by vertical dotted line. The animal was killed on the sixth day after irradiation, and culture of the heart's blood showed infection with *B. coli*. The portion of the chart to the left of the arrow shows the normal range of fluctuation of the white count. The red count shows an initial increase and a terminal acute decrease, the final figure being 3 million per c.mm. The platelets show irregular fluctuations and still numbered 1·5 million when the animal was killed. There is a progressive decrease in the total white count, which fell to 200 per c.mm. on the third day after irradiation and remained at about this level to the end. The lymphocytes (normal range 3200 to 7200 per c.mm.) fell to 250 per c.mm. 24 hours after irradiation; the polymorph and eosiniphil counts decreased more slowly.

FIG. 2.



Cat 45, X rayed for 30 minutes at point indicated by vertical dotted line. The general health and appetite were not much affected by this dose. The total white count fell to about 1000 per c.mm. on the fourth day after irradiation; slight recovery then set in, interrupted by temporary remissions. On the thirty-fifth day (not shown in chart) the count had risen to 7600 per c.mm. There was a rapid initial decrease in the lymphocytes and a more gradual decline in the polymorphs. During the recovery period the polymorph count exceeded the lymphocyte count. The red count showed irregular fluctuations (between 5·2 and 7·8 million for the first 12 days after irradiation.) From the fourteenth day the count steadily declined, the lowest value reached being 2·7 million on the twenty-second day. Slow recovery then set in; on the thirty-fifth day (not shown in chart) the count had risen again to 5·1 million, and on the 100th day it was 8 million. The platelet count before irradiation was between 3 and 5 million per c.mm. (citrate method). Observations made by the direct method for two weeks previously gave similar results (not charted). After irradiation the platelet count showed irregular fluctuations for 12 days and then sank steadily, the lowest value noted being 0·55 million per c.mm. on the twenty-second day; gradual recovery then commenced. On the 100th day the count had been restored to 3·5 million.

Platelets.

The range of normal variation noted in the small series studied is from 0·75 million to over 5 million. The latter figure is, of course, very much higher than that noted in man or the rabbit, but the counts have been made by two methods and repeated daily for many days so that we feel that they are substantially correct.

Effects of Irradiation.—(1) In animals that succumb the platelets have *not* shown any marked decrease before death. Thus cat 49 was killed on the seventh day when

it was very ill; blood culture was positive showing *Bacillus coli communis*, but the platelet count on that day was about 1·5 million (Fig. 1). Cat 53 died on the tenth day with a platelet count of 0·75 million (see protocol); post-mortem examination showed pus in the pleura and multiple abscesses of the lungs. This is contrary to the experiences of Cramer, Drew, and Mottram[1] with the rat, who found a marked decrease in the platelet count following gamma-radiation in animals that died of intercurrent infection.

(2) In animals that survive, the platelet count generally follows the same course as the red count. For the first 12 days irregular fluctuations occur; a definite decline is then noted (Fig. 2), which continues for a number of days. The count remains at a comparatively low level for some weeks and then recovery sets in.

PROTOCOL.—*Cat 53.*

Day in May.	R.B.C. in millions per c.mm.	W.B.C. per c.mm.	Platelets in millions per c.mm.	Plasma chloride.*	Remarks.
7th.	7·4	14,400	1·2	0·665	Coagulation time 7·5 min. Wt. 2360 g.
8th.	7·9	12,000	1·1	0·665	—
	Irradiate whole animal for 60 minutes.				
9th.	7·0	7,600	0·95	—	Coagulation time 2·5 min.
10th.	8·1	1,200	1·2	0·625	—
13th.	7·9	200	—	0·625	—
14th.	8·0	800	0·9	0·625	—
15th.	7·5	600	0·63	0·615	Poikilocytosis and anisocytosis. Many very small red corpuscles.
16th.	10·2	0	1·1	0·625	Red cells very crenated and empty-looking. Very many minute red cells.†
17th.	6·6	0	1·3	0·625	Crenation and poikilocytosis less. Small red cells no longer present.
18th.	6·2	0	0·75	—	Animal very ill.
19th.	—	—	—	—	Dead.

* g. NaCl per 100 c.cm. † Evidence in counting chamber of fragmentation of red cells.

The white count showed the usual decline; no white cells were visible from the eighth day onwards. The rise in the red count to 10 million on the eighth day was associated with intense poikilocytosis and anisocytosis and the appearance of numerous very small erythrocytes. The platelets showed irregular fluctuations and numbered 0·75 million before death.

The plasma chlorides (as NaCl) fell from an initial value of 0·665 g. per 100 c.cm. to 0·615 g.

Post-mortem examination.—Pleural cavities contained much pus; multiple abscesses of both lungs. The endocardium and pericardium were turbid; there was a hæmorrhagic effusion into the pericardial sac. Minute hæmorrhages in cortex of kidney, in the spleen, and in the mucous membrane and musculature of the small and large intestine.

Summary.

This paper illustrates the selective action of X rays on the blood cells of the cat. The doses of irradiation employed were definitely less than the lethal dose for Jensen's rat sarcoma cells, approximately ½ rad. or under.

The following is a summary of the more important changes observed.

(1) The lymphocytes are decreased early and markedly.

(2) The polymorphonuclear leucocytes after an inconstant initial increase, decrease more slowly and sometimes to a smaller extent.

(3) Marked changes in the red cell count occur later still: (*a*) in fatal cases, an acute anæmia develops in the final stages associated with evidence of hæmolysis or the presence of widespread hæmorrhages; (*b*) in non-fatal cases the anæmia develops very slowly and recovery is similarly gradual.

(4) The blood platelets are apparently unaffected in the cases that have ended fatally within a short time of irradiation, even when there is evidence of infection. In cases that survive the platelet count declines parallel with the fall in the red count, and then shows a gradual recovery.

These results form part of a more extensive research which will be published more fully elsewhere. We are deeply indebted to Prof. Sidney Russ for his advice and help throughout this work.

[1] Cramer, W., Drew, A. H., and Mottram, J. C.: Proc. Roy. Soc. B., 1922, xciii., 449.

Clinical and Laboratory Notes.

THE COLORIMETRIC ESTIMATION OF VITAMIN A.

BY THOMAS MOORE, D.Sc.

(*From the Medical Research Council's Nutritional Laboratory, Cambridge.*)

THE original suggestion of Rosenheim and Drummond [1] that the well-known colour reaction of cod-liver oil with sulphuric acid was attributable to the presence of vitamin A has been approved with increasing confidence during the past eight years. More delicate reactions, notably with the antimony trichloride reagent,[2] have since been evolved, and by the use of a specially adopted form of the Lovibond tintometer [3] this reaction has been made the basis of a very convenient method of titration. The report of the Accessory Food Factors Committee published in THE LANCET [4] stated that in so far as concerns the grading of cod-liver oils the colorimetric method afforded information consistent with that derived from biological tests carried out in several independent laboratories. Drummond and Baker [5] have gone so far as to suggest that the vitamin may be assayed more accurately by colorimetric than by biological methods.

In other quarters, however, the specificity of the colour reactions has been questioned. On the one side Steudel and Peiser [6] have stated that the "vitamin" reaction is given by inactive crude cholesterol, while in the opposite direction Steudel [7] has also encountered a substance which although active in doses of 1·0 g., produced no colour reaction. These criticisms, although indicating certain difficulties which might arise in the application of the colorimetric technique, can be readily answered on theoretical grounds. For in the first instance chromogens derived from cholesterol may usually be readily distinguished from the vitamin chromogen by their inability to produce colorations when dissolved in natural oils; in the other direction very weak sources of the vitamin may produce colorations so faint as to escape observation unless the test is carried out on the unsaponifiable fraction rather than on the whole oil. Further criticism of the specificity of the reaction has been put forward by Hawk,[8] who has claimed that the chromogenic value of cod-liver oil may actually increase in samples exposed to climatic conditions calculated to cause destruction of the vitamin. Jones, Briad, Arzoomanian, and Christiansen[9] have also reached a similar conclusion, having found that in certain samples of cod-liver oil the colorimetric assay might exceed the biological assay by as much as 600 per cent.

Recently Euler and his co-workers,[10–16] who in a series of papers have claimed that vitamin A activity is not the property of a single substance, but may be possessed by several carotinoids or "polyenes," have indicated certain other objections to the general application of the colorimetric method of estimation. Different "polyenes" have been found to give colour reactions with varying intensity and shade, and no correlation has been found between the

intensities of the colorations produced and the activity of the various polyenes. Certain polyenes—xanthophyll, lycopin, α crocetin, bixin and capsanthin—have, in fact, been found to produce colorations, although biologically inactive. Colorimetric data can therefore only be used as a basis of comparison when they are given by the same "polyene," or by a mixture of "polyenes" in constant proportions.

Preliminary experiments by the writer in confirmation of the claim that recrystallised carotin may possess intense vitamin A activity have already been mentioned in THE LANCET.[17] In view of the work of Duliere, Morton, and Drummond,[18] who have found after very thorough purification the pigment (M.P. 184·9°) becomes much less active, the main question of a possible relation of vitamin A to carotin must for the time being present a very open aspect. Nevertheless, the chromogenic properties of such samples of carotin (M.P. 174°) as have been found in my experiments to be consistently active, and also of the colourless inactive products which may be derived from them by mild oxidation, must be of immediate practical interest in illustrating certain difficulties which stand in the path of a universal application of the colorimetric technique.

It will be recalled that the well-known reaction of cod-liver oil with antimony trichloride is characterised by an absorption band at about 610 μμ, and until the discovery of the activity of carotin samples it seemed probable that the danger of the simulation of the test by casual inactive bodies could be ruled out by a spectroscopic confirmation of the position of the absorption bands. With highly active samples of carotin, however, the shade of colour produced is noticeably duller and more green, and is characterised by the appearance of an absorption band at 590 μμ. Any trace of the 610 μμ band, if present, is too weak to be detected, although judging by the biological activity well marked adsorption at this position would be expected. Vitamin A activity cannot therefore be restricted to materials producing adsorption at a specific position. Is the production of a blue coloration of any shade a sign of vitamin A activity?

In addition to the findings of Euler, experiments by the writer on the oxidation of carotin prove that this is not the case. When carotin in chloroform solution was treated in the cold with benzoyl peroxide [19] an almost complete bleaching was effected, which was accompanied by disappearance of physiological activity. Nevertheless it was found that the chromogenic value remained unaltered, and in common with vitamin A a transient blue coloration was still given even after dissolving the reaction products in arachis oil. In this case, therefore, a colorimetric assay of vitamin activity by the tintometer method would have furnished a completely deceptive result. Subsequent spectroscopic examination disclosed that the absorption band attributable to the original carotin was no longer in evidence. Selective absorption was much less clearly defined but appeared to be mainly at about 640 μμ.

The above results lend force to the suggestion of the Accessory Food Factors Committee that before a conclusion can be drawn as to the general validity of the colorimetric method of assay, tests should be made on substances other than cod-liver oil which contain vitamin A, such as butter, palm oil, cereal oils, &c. While the colour reactions of cod-liver oils, confirmed by rigid spectroscopic tests, probably provide a reliable means of estimation, the colour reactions of vegetable extracts and of some less familiar animal sources remain an almost unexplored field. Who would care to predict on purely colorimetric data whether cayenne pepper or an extract of boiled lobster shells (both rich in carotinoids) would prove effective as a source of vitamin A?

For the present it seems safe to assume that materials which give no blue coloration with antimony trichloride, even after the removal of saponifiable matter, must be devoid of vitamin A activity. Materials of liver oil origin giving colour reactions characterised by absorption at 610 μμ may be considered active. But, on the other hand, materials which give colour reactions characterised by absorption at other positions may be either active or inactive, or mixtures of inactive and active chromogens, and the biological technique still remains the only satisfactory method of assay.

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AN UNUSUAL CASE OF URINARY FISTULA.

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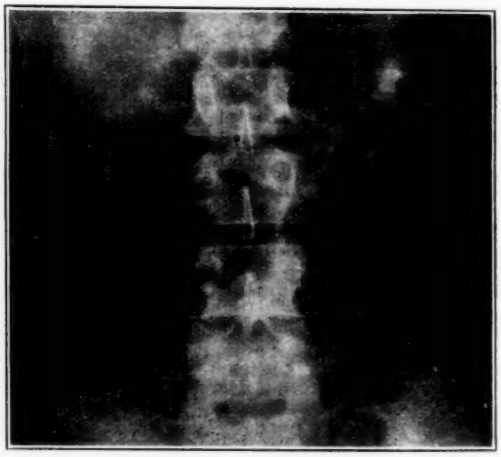
MODERN methods of diagnosis are so reliable that the end-results of neglect are rarely seen, and therefore the following case is interesting.

In February, 1929, a tribesman, aged 36, was referred to me on account of a discharging sinus in the upper part of his left

FIG. 1.



Calculi in the left kidney.

thigh. He gave a history of an attack of pain in the left iliac fossa four years previously; this had occurred every spring. Nine months earlier a swelling had appeared in the upper part of the thigh, and this had been incised by his

doctor and a discharging sinus had resulted. Periodically he had noticed a thick deposit in his urine, but no blood was ever present.

The discharging sinus was situated in Scarpa's triangle, immediately below the centre of Poupart's ligament, and had

FIG. 2.

Opaque emulsion in the fistula. Catheter in the left ureter.

an orifice large enough to admit a No. 10 catheter. A probe passed without meeting any obstruction, running upwards and backwards for a distance of 5 inches. The vertebral column and hip-joint appeared normal. In the region of the left kidney, although the organ was not tender, there was a slight fullness which drew attention to it. The urine contained large quantities of pus. X ray and cystoscopic examinations were made, and the accompanying figures illustrate the condition. Fig. 1 shows the presence of renal calculi in the left kidney. Fig. 2 shows a ureteric catheter in the left ureter, arrested at the brim of the pelvis. An opaque injection has been made into the fistula and, having reached the kidney, is descending the ureter to a point a short distance proximal to the tip of the catheter, but in a more medial plane. A further radiogram showed a later condition in which the opaque emulsion, having traversed the "S" shaped course taken by the ureter was running down the ureter alongside the catheter.

The left kidney was explored by the usual approach. It was found fibrosed, half the normal size, and densely adherent to the surrounding structures. Numerous calculi could be felt. Owing to the adhesions to peritoneum and viscera, a nephrectomy was impossible. As decapsulation also proved unsuccessful, the kidney was split from pole to pole, and six calculi removed. A thick fibrous cord was felt joining the pelvis of the kidney at the junction of the inferior calyx, and on removal of a calculus from this calyx a large quantity of pus welled up. No normal tissue could be demonstrated in the kidney, which was left open and drained. Two months after operation the sinus had closed, the nephrotomy wound healed, and when the patient was discharged he had no symptoms and had gained weight.

My explanation of the sequence of events which led to the condition found at operation is that, owing to delayed diagnosis, the chronic inflammation caused such dense adhesions that an abscess formed within the psoas sheath and tracked down to Scarpa's triangle.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

PROCEEDINGS OF THE REPRESENTATIVE BODY.

(*Concluded from p. 197.*)

Heroin: An "Oppressive Restriction."

THE Dangerous Drugs Acts, and especially the new regulations about heroin, produced a crop of protesting resolutions, and Dr. J. W. BONE took the opportunity to explain how the situation had arisen. The Act of 1920, he said, under which the profession had worked quite happily, required that practitioners should keep a record when prescribing drugs containing more than 0·1 per cent. of morphine or heroin, or 0·2 per cent. of cocaine or opium. In 1925 Great Britain pledged herself at Geneva to apply the Dangerous Drugs regulations to all preparations of heroin, of whatever strength, and this provision of the 1925 Act came into force on Jan. 1st of the present year. The Association had actively objected to it in 1925 and was still in correspondence with the Home Office. Sir Malcolm Delevingne's principal argument now seemed to be that nothing could be done in face of the international agreement, but in point of fact the Convention stipulated that the requirement to enter the quantities distributed need not necessarily apply to supplies dispensed by medical practitioners or to sales by duly authorised chemists. Unfortunately, the Act of 1925 which applied the Convention to this country contained no such proviso and said definitely that any strength of heroin must be recorded. Dr. Bone had always thought this an oppressive and unnecessary restriction on medical practice and at last he was finding wide support for his views. He thought the meeting might well suggest that legislation to amend the Act in this sense should be encouraged. It was commonly said, he added, that Great Britain was the only country which had honourably tried to carry out the terms of the Convention and that the United States had taken no steps to ratify it. America was, however, in a fair way towards cutting heroin out of the pharmacopœia of every doctor; and with good reason, for in the States heroin addiction was undoubtedly a serious problem and justified measures which he saw no reason to enforce in this country.

Dr. R. M. MANWARING-WHITE spoke of the great value of heroin in such conditions as dry irritable cough, and suggested that its use might be diminishing under the present exacting restrictions. He understood that there were practically no heroin addicts in this country.

Dr. JOHN STEVENS held that there was no reason for extending the restrictions to this valuable drug for which there was no really adequate substitute—and proposed for Edinburgh and Leith a motion which strongly supported the Council "in its effort to obtain amendment of Section 3 of the 1925 Act," and recommended that "heroin and its salts should come under the same conditions as morphine and its salts." This motion was passed by the Representative Body, with the following addition made at the instance of Dr. F. TEMPLE GREY:—

Also that the Council should on all possible occasions urge the Government not to enter into international conventions involving medical questions until the opinion of the medical profession has been ascertained.

Dangerous Drugs and Record-keeping.

Dr. STEVENS got little support for his complaint that it is impossible for a practitioner to have his stock of dangerous drugs under lock and key and at the same time have them available for inspection in his absence, but a discussion arose on the third proposition which he brought forward for his Division.

The Regulations say that no record need be kept when a drug or preparation is administered by, or under the direct supervision and in the presence of, a doctor. Dr. Stevens suggested that a similar

exception might be made when it was administered "under his authority given to a nurse or other responsible person."—Mr. DAVID LEES supported this proposal on the ground that it provided an alternative to the present system under which a medical man might prescribe 50 or 100 tablets and send them to a nursing home where they could be used ad lib. by the patient.—Dr. F. RADCLIFFE said he understood that if nurses in a home administered doses of morphia and entered these doses in a book, kept at the home, this would cover what the doctor had ordered by lots of 50 or 100.—Dr. BONE, in reply, described the practice mentioned by Mr. Lees as quite irregular, and made it clear that a record must certainly be kept if a dose is given in the absence of a doctor. In the case of a hospital or nursing home a book must be provided for the purpose by the institution; where, on the other hand, the drug is given by a nurse to a patient in a private house, the practitioner who has supplied it must enter the doses on his own register.

The amendment proposing an alteration in this rule was lost by a large majority.

Relation of the Private Practitioner to the Public Health Services.

Last year the Representative Body viewed with concern "the insidious inroads continually being made on private medical practice under the auspices of the State, voluntary bodies, and others," and recorded its opinion that "the increasing tendency to transfer the treatment of many diseases and conditions to whole-time medical officers" is detrimental to the public health. Dr. Alfred Cox, the Medical Secretary, has since reported personal investigations into the working of maternity and child welfare centres and school clinics, and the Council has prepared an elaborate report whose conclusions and recommendations were presented to the meeting by Dr. BONE.

After stating that the main sphere of the private practitioner is the giving of medical advice and treatment to individuals, whereas the main sphere of the public health officer is the promotion of healthy conditions for the community, the Council goes on to point out that there is no definite line of demarcation between these spheres and that in both there is need and opportunity for clinical and preventive work. So far as possible the private practitioner and the medical officer should associate themselves, and be interested in, each other's work; nevertheless "the general direction of services established by or under the auspices of the local authority should be entirely within the province of the public health medical officer; and equally no clinical work should be undertaken by public health medical officers which can, with due regard to administration, be done as well by private practitioners." The profession, says the Council, recognises the propriety of central departments and local authorities making provision for medical advice and treatment, but public centres and clinics should not be developed in such a way as to militate against or interfere with suitable developments of a contributory National Health Insurance scheme for the appropriate sections of the population.

"The work of such clinics should therefore be primarily directed to education in the general rules of health and of hygiene; medical or surgical advice or treatment for the individual should be confined (*a*) to such treatment as can be actually given therein, and should not include any treatment that makes domiciliary attendance advisable or involves a stay of more than 48 hours at any clinic where beds are provided; and (*b*) to those patients who are unable for some reason to obtain treatment from a private doctor and those who, as a result of supervisory medical work undertaken by the local authority, are discovered to be ailing, and for whose ailments treatment would not be sought unless it were provided by the local authority."

The question of the existence of a family doctor, or of the possibility of securing one, should be raised, the Council maintains, in respect of every case attending a clinic, and such officers as health visitors and midwives should be actively discouraged from sending direct to a clinic any cases which can be dealt with privately. The question how far private practitioners can undertake the work of the clinics should be seriously considered in each locality in conference with local practitioners, and wherever practicable "all medical advice and treatment at local clinics should be given on a part-time basis by private practitioners, whether it is within the sphere of general practice or whether it is of a specialist character." Those who accept such service must, it is emphasised, be genuinely interested in the work they undertake to do and must look on it as the first call on their time.

Dr. EUSTACE HILL, supporting these recommendations, cited instances in which maternity and child welfare work was very well done by private practitioners on a part-time basis, but pointed out that some medical men did not like sending their patients to clinics run by other doctors practising in the same district. The work of a welfare centre was seriously interrupted if a practitioner failed to attend because he was looking after his own affairs, and it could not be conducted on this basis. Despite undoubted administrative difficulties Dr. Hill felt that part-time work had many advantages.—Dr. E. R. FOTHERGILL spoke of the revolutionary changes in medical work since the beginning of the century, and said that the Council was hoping to present to the next Representative Meeting an ideal scheme for medical service in this country, showing the lines further changes ought to take.

A number of details arising out of the report were referred to the Council for consideration, but the conclusions and recommendations outlined above were accepted without much discussion.

Dr. C. FORBES, for Aberdeen, proposed "That the functions of the health visitor and district nurse could with advantage be fulfilled by one and the same person or public nurse; and that this public nurse, for purposes of domiciliary health education and propaganda, should be under the immediate direction of the family doctor, where such exists." This plan, he said, had been successfully tried in Aberdeenshire. But it did not commend itself to the Representative Body, and Dr. EUSTACE HILL described it as an encroachment on the sphere of preventive medicine which would certainly not be acceptable to local authorities in England.

Reform of the Poor-law.

Dr. BRACKENBURY reminded the meeting that under the new Local Government Act the councils of counties and county boroughs were now preparing schemes for carrying out the functions which would be transferred to them next year. If they liked to do so these councils could go a long away towards getting unified public health services. On the other hand, they need not. The Association was anxious to get them to break up the poor-law so far as they were able and use their other legislative powers instead. It also felt that the work would not be done as efficiently as possible unless medical men and ex-guardians were coöpted as members of the new poor-law committtees. The Council of the B.M.A. was therefore scrutinising the schemes as they appeared. There was a very unfortunate circumstance, however, which made one section of the Act almost a farce. It was laid down that the schemes had to be submitted by Sept. 27th, and as most of the councils did not meet in August or September the result was that many had already been published, whilst many others would appear shortly. The schemes were open to criticism for only four weeks after publication, and the effect of submitting them at this time of year was to prevent their consideration by local district councils or by central bodies such as the B.M.A. This had certainly not been the intention of Parliament, and he appealed to local authorities to defer the actual submission of their schemes until the last possible day.

Dr. Brackenbury also referred to Section 13 of the Act, which says that before making any additional hospital provision, or any different use of transferred hospitals, local authorities must consult any body which they regard as representing the voluntary hospitals of their area—including both the medical

staffs and the governing bodies. It was highly important that in every area there should be such a body and the Council earnestly asked members of the profession to take immediate steps to promote the formation of these consultative committees. If there were cottage hospitals in the district they too should be represented.

Representation of Profession on Local Authorities.

Speaking on another section of the Council's report Dr. BRACKENBURY pointed out that more and more members of the medical profession were being drawn into contractual relation with the work of the local authorities. This meant that more and more were being legally deprived of the right to take part in public health work as members of those authorities. The Local Government Act would greatly swell the numbers of those whose medical experience could not be placed at the disposal of the community, and the Ministry of Health realised that this was not in the public interest. It was interesting to note that teachers were not debarred from belonging to education authorities, and were indeed obliged to send representatives.—In the course of a brief discussion on this topic a representative said that he had two partners, one of whom did part-time work at a public clinic. Because of this appointment all three members of the firm were prevented from taking any part in the government of their town.

Representation of Profession in Parliament.

So much non-controversial talk proved a little enervating, and everyone brightened up noticeably when asked to destroy the Association's Parliamentary Elections Fund. The CHAIRMAN and the meeting amiably accepted an assurance from representatives of the press that they would observe their usual discretion in suppressing names and details, after which Dr. E. K. LE FLEMING entered on an account of the Fund's recent history. It had proved impossible he said, to support any Labour candidate at the general election principally because the Labour Party still held by nationalisation or municipalisation of all hospitals and the ultimate establishment of a whole-time salaried State medical service. As stated in the published report of the Council, approval and support had been given to the candidature of two members of each of the other parties—namely, Dr. J. H. Morris-Jones (Lib.), Dr. A. Vernon Davies (Cons.), Dr. J. Vincent Shaw (Lib.), and Dr. L. Haden Guest (Cons.), all of whom expressed themselves as in favour of the Association's policy. The two former had been elected. The Fund, said Dr. Le Fleming, had not been too well supported, but after much thought he had come to the conclusion that it served a useful purpose. It was valuable to have in the House medical men who could accurately represent the views of the profession as set out in the policy of the B.M.A.

Dr. FOTHERGILL, proposing for Brighton that the Fund, having failed of its purpose, should be wound up and that the money should be used for cognate purposes, said that legislation was now done in Whitehall, not at Westminster. An M.P.'s duty was first to his party, then to his constituents, and then to his profession. Some would put conscience first; in a few instances this might be so. At any rate, the Association was already in a position to approach the central authorities at Whitehall and the local authorities elsewhere, and it could best gain its ends in this way.—Mr. BISHOP HARMAN also wanted to kill what he described as "this untimely child," and the proposal got further support from Dr. PETER MACDONALD, despite (he said) the arguments advanced in its favour.

Sir RICHARD LUCE said he had always been opposed to the Fund and had never been ready to take anything from it. After a man's duty had been done by conscience, constituents, and party—in that order, he thought—what then was left? A Member of the House who was paid to represent some outside body—that was what it came to—was liable to the taunt that he went there to represent special interests. To be in such a position was unpleasant, especially to a professional man. Anyone familiar with medical work would be listened to in Parliament with respect and attention, but he would have nothing like the same influence if it was recognised that he was there to support the interests of his profession. Sir Richard did not believe, moreover, that the Fund had ever got a man in who would not have been elected without its help.

Dr. D. F. TODD spoke of the educative effect of having medical men in the House. They went not to represent the profession directly, but to represent the community.—Dr. S. MORTON MACKENZIE wanted to let the Fund go on, and so did Mr. MCADAM ECCLES.—Dr. BRACKENBURY said it had failed financially, but in a more modest form was an essential part of the machinery; Dr. TEMPLE GREY pleaded for its abolition; Dr. LE FLEMING replied in its defence; and eventually Dr. FOTHERGILL'S resolution to wind it up was put to the meeting and defeated.

A Medical Ophthalmic Service.

As there is little likelihood of any draft regulations about ophthalmic benefit being issued in the near future the Council has agreed that the National Ophthalmic Treatment Board shall put into operation a scheme for an ophthalmic service approved by the Representative Body last year.

By arrangement under this scheme, it is stated, insured persons and their dependents may have their eyes examined "by an ophthalmic medical practitioner at his private consulting room," and obtain spectacles, at an inclusive fee of 18*s*. Arrangements have also been made whereby non-insured persons who cannot afford the ordinary fee and whose family income does not exceed £250 a year, may take advantage of these facilities. The spectacles will be supplied by members of the Association of Dispensing Opticians, who practise no sight-testing. The scheme will be administered by a National Ophthalmic Treatment Board comprising representatives of this association and of the B.M.A.; the Minister of Health, and approved societies are also being invited to send nominees. Particulars may be had from the general secretary of the Board at 1, High-street, Marylebone, London, W. 1.

Dr. R. WALLACE HENRY (chairman of the Ophthalmic Committee) said he believed the scheme would be found quite workable, and Mr. BISHOP HARMAN described it as a really valid attempt to cater for one of the great needs of civilisation. He believed it would be adopted by public authorities and other organisations to the great advantage of the public.

Vaccination.

Newcastle tabled a resolution demanding that "Government lymph should be available for all practitioners and that every general practitioner should be able to vaccinate his own patients in the same way as public vaccinators, and obtain similar remuneration from the Government." Bath wanted the meeting to pass a statement that—

The Representative Body views with concern the spread of small-pox in this country and the difficulty of ensuring adequate vaccination of the public; that one of the reasons for this inadequacy of protection is the uncertainty of certain preparations of vaccine lymph; that sometimes these fail to produce reactions and vaccinated persons acquire small-pox, at other times the reaction is so severe that the health of the patient is seriously affected; that experience shows that these objections do not apply to Government lymph, but this is not available for other than public vaccinators, and in the case of immediate contacts for medical officers of health; and that the Representative Body urges the Council to represent to the competent authorities that vaccination cannot be properly promoted unless they are prepared to provide Government lymph to private practitioners (if necessary on payment) or to give a Government guarantee of efficiency to supplies of lymph prepared by private firms.

In 1923 the Minister of Health told the Association that he understood there was no difficulty in obtaining supplies of glycerinated calf lymph from reputable firms, that the Government Lymph Establishment was established to provide lymph for the primary vaccination of infants by Government vaccinators, and that the supply of such lymph to doctors would

involve a large and costly extension of the present supply for which he saw no need.

This statement, which has since been repeated several times, was criticised for Bath by Dr. R. G. GORDON. It was time, he said, that everyone woke up to the fact that the incidence of small-pox was becoming serious. The lymph obtainable from reputable firms was sometimes ineffective and sometimes drastic in its action. He would say nothing about post-vaccinal encephalitis, because our present knowledge did not justify dogmatic statements about it. It was recognised, however, that on the whole Government lymph gave relatively constant results, and at a time when small-pox and the disuse of vaccination were both increasing it was surely not too much to ask that a supply of such lymph should be available.—Dr. MIDDLETON MARTIN thought that the grave difficulties in the way of getting the public to appreciate the importance of vaccination should be combated by encouraging practitioners to use their influence in the home. He hoped that further facilities would be provided.

In the subsequent discussion a public vaccinator was quoted as saying he had never had a failure with Government lymph in 21 years—whereas lymph from a private firm might give as few as 25 per cent. of "takes"—and Dr. W. N. WEST-WATSON said he had been struck by the small proportion of successful results with the lymph he had been using recently.—Dr. B. H. PAIN said that when some years ago he proposed in the *Times* that every medical man should vaccinate his patients at the cost of the public an inspector from the Ministry informed him that this would be expensive and would involve placing practitioners under supervision. Accurate records had to be kept so that if anything went wrong the lymph could be traced to its origin.

Dr. BRACKENBURY recommended caution, if only because there were members of the Association whose livelihood depended on the private manufacture of lymph. When vaccine proved ineffective complaint should be made to the Therapeutic Substances Act Advisory Committee.—The CHAIRMAN (Dr. Hawthorne), as a member of that committee, said that there were inspectors under this Act just as under the Food and Drugs Act. Though these inspectors examined samples of lymph as part of their duties, their procedure would doubtless be hastened by specific complaints.—Dr. C. E. S. FLEMMING maintained that if this Act controlled the preparation of lymph, then its control was inadequate. A number of people in his district had been made seriously ill by vaccination, and this had naturally affected public opinion adversely.

Dr. J. B. MILLER said that the general practitioner, who had to take the responsibility of advocating vaccination, ought to be able to feel confident in the lymph used for the purpose. Dr. Miller did not regard official supervision as a hardship; but Dr. E. LEWYS-LLOYD (Chairman of the Public Health Committee) remarked that if anyone was under the impression that the record-keeping and inspection of public vaccinators were nominal, he was making a mistake. In Dr. Lewys-Lloyd's opinion the Therapeutic Substances Act did give a guarantee, and if any sample of lymph was inefficient the machinery of this Act should be set in motion.

Ultimately the proposed resolutions were referred to the Council for consideration.

A State Medical Service: Possible Unsoundness of the Young.

Bearing the arms of Kensington Mr. E. B. TURNER entered the lists with a motion condemning the project of a whole-time salaried State medical service and calling on the Association to educate and organise its members to resist any legislative attempt to set one up. The proposal would either have to be fought or allowed to go by default; and he was all for fighting. If the profession felt about it as he did, then steps should be taken to form opinion. There was a large body of younger men whose outlook was largely bounded by contract practice, and who would easily be lured into a State medical service. "Si vis pacem, para bellum," said Mr. Turner—apparently unaware that the sentiment is out of fashion.

Dr. BRACKENBURY was almost scornful. The motion had an air of panic. If one thing was certain it was that the whole medical profession was fully decided that it would not work a whole-time medical service.—And did Dr. Brackenbury remember, asked Mr. TURNER, how sound and solid the profession had been about national insurance? How 27,000 practitioners had said they would not go on the panel till the B.M.A. took away its embargo, and how they flocked to do so before that embargo was removed? Would it not have been better then not to have passed quite so many unanimous resolutions at crowded meetings, but rather to have considered and discussed the views of the silent minority?

Dr. H. S. BEADLES did not believe the profession was "solid" at all. He thought many young men would willingly join a whole-time service, though they would not be wise to do so.—The same view was taken by other representatives, one of whom spoke of an "enormous number" of men who wanted such a service.—Mr. BISHOP HARMAN said this was absurd; 99 men out of 100 had spunk enough not to prefer whole-time salaried work to the adventure of practice.—Dr. C. E. S. FLEMMING suggested that the best way to meet this talk about a State medical service was to formulate a comprehensive scheme in its place, as the Council hoped to be able to do next year.—Finally a member who rashly compared the advantages of private practice and public work was eliminated by Dr. BRACKENBURY, who said that such comparison had nothing to do with the case. What the Association had always set its face against was not the public health service, but rather the stereotyping of ordinary family practice into the form of a State medical service. In favour of this, he repeated, there was *no* considerable body of medical opinion.

Not much more was said on this subject. Rejecting Mr. TURNER'S motion for mobilisation, the meeting contented itself with reaffirming its former convictions on the subject of a State medical service.

Need of Superannuation Schemes for Medical Officers.

Arising out of the case of the late tuberculosis officer for Gateshead, who is believed to have contracted encephalitis lethargica from a patient in the course of his duty and on losing office received no compensation in spite of steady pressure on the local authority concerned, Dr. R. FORBES for Gateshead proposed:—

> That . . . it be an instruction to the Council: (*a*) to take such action as it deems necessary to urge local authorities to adopt superannuation schemes under which the medical officers and their staffs would benefit. (*b*) To make strong representation to all local authorities that where a medical officer is disabled permanently or with fatal results, through contact with infectious diseases, and where his disability is directly traceable to his work in this respect the dependents of the practitioner should be suitably compensated for the loss involved.

Describing the case as one of great hardship, Dr. Forbes said that a medical officer who was required to stand between the community and infectious disease ran a rather special risk, and it was not too much to ask that the community should compensate him or his dependents.—The motion was carried.

Remuneration of Poor-law Medical Officers.

Attention was drawn by the North of England Branch to the deplorable conditions of service under which poor-law medical officers are at present working in areas where unemployment is rife.—Dr. R. FORBES said that the question was national rather than local, but Dr. BRACKENBURY replied that the Council, while fully aware of the misfortunes of these officers on Tyneside must also take into account the fact that in many parts of England medical men would be sorry to have the terms of their service

reviewed. The following motion by Gateshead was approved:—

That the Representative Body, recognising that poor-law medical practitioners will shortly become the servants of a new authority, considers that the time is now opportune to explore the status and remuneration of these officers, and instructs the Council to examine the whole matter and take such steps as are necessary to secure equitable terms of service and adequate remuneration for the work involved.

Other Subjects Discussed.

The meeting agreed to the two following proposals of the Council:—

That the Representative Body reaffirms the opinion it expressed in 1924 that the General Medical Council and the profession generally have acquiesced in the custom, now of long standing, of advertising in the lay press, nursing homes, sanatoria, and hydropathic institutions, and feels that, in any policy formulated by the Association, regard must be had to this custom; and further that the R.B. takes no exception to the association of registered medical practitioners with an institution for the treatment of patients by physiotherapeutic and electrical methods, provided the following essential conditions are strictly conformed to: (*a*) That the institution is not in any way advertised to the lay public; (*b*) that the treatment of all patients is under the direct control of a registered medical practitioner who accepts full responsibility for their treatment; (*c*) that the relation between the medical officer of the institution and private practitioners conforms to the usual ethical procedure between consultant and private practitioner.

That the following Clause 1 (1) of the Preservation of Infant Life Bill (as sent from the House of Lords to the House of Commons) be approved:—1.—(1) Subject as hereinafter in this subsection provided, any person who, with intent to destroy the life of a child capable of being born alive, by any wilful act causes a child to die before it has an existence independent of its mother, shall be guilty of felony, to wit, of child destruction, and shall be liable on conviction thereof on indictment to penal servitude for life; provided that no person shall be guilty of an offence under this section unless it is proved that the act which caused the death of the child was not done in good faith for the purpose only of preserving the life of the mother.

Dr. ELEANOR LOWRY, for Marylebone, proposed a motion (which was carried) deploring "the insufficient provision which exists for the administration of the beneficent provisions of the Mental Deficiency Acts" and assuring the Minister of Health of the support of the B.M.A. in urging the local authorities to meet the grave need for institutional care.—Dr. H. C. BRISTOWE spoke strongly of the extent of this need, and Dr. A. HAWKYARD mentioned that unfortunately attempts to get defectives into institutions were often hampered by members of the medical profession whose only object sometimes seemed to be to get their patients off. There was very little knowledge of the Acts among practitioners.

Dr. TEMPLE GREY proposed for Marylebone that "communications between doctor and patient, unless they concern fraud or crime or otherwise the public interest, ought to be privileged from disclosure in courts of law." The extreme view of the sanctity of medical privilege was, he said, not the medical but the social view. The public would demand medical privilege as soon as they realised that it was *their* secrets which were being given away.—The motion was referred to the Council.

On the report of the Organisation Committee Dr. MORTON MACKENZIE said that whereas there were only 1852 women medical practitioners in this country in 1922, the number in July of this year was 4259, of whom about two-thirds were members of the Association.

The Council's negotiations towards the establishment of an international medical sea code were approved. Dr. BONE said that the Board of Trade hoped to be able to make good use of the code proposed.

The General Medical Council.

It was announced that at the forthcoming election of Direct Representatives of the profession on the General Medical Council the candidature of Dr. H. B. Brackenbury and of Mr. N. Bishop Harman would be supported by the Association.

The CHAIRMAN and others referred in very warm terms to the work of Sir Jenner Verrall, who is resigning from the G.M.C. after over 18 years' membership. A resolution of deep appreciation of his services was placed on record.

THE ANNUAL GENERAL MEETING.

On July 23rd the retiring President, Sir Ewen Maclean, invested Prof. A. H. Burgess with his badge of office, after which the Chairman of Council, Dr. Brackenbury, invested Sir Ewen with the new past-president's badge. In reporting that the Representative Body had elected Dr. W. Harvey Smith, professor of ophthalmology in the Manitoba Medical College, as President for 1930–31, Prof. Burgess said that the last meeting of the Association held abroad was at Toronto in 1907, and that the next would be at Winnipeg in 1930 under Prof. Harvey Smith's presidency. The treasurer, Mr. Bishop Harman, formally presented the new symbolic staff which he has given to the Association.

At the adjourned annual general meeting later in the same day the President delivered the address which we published last week. He presented the Sir Charles Hastings clinical prize to Dr. Arthur Crook, of Norwich, the Hempson prize to Dr. A. C. T. Perkins, of Bury St. Edmunds, and the Middlemore prize to Mr. W. S. Duke-Elder.

THE RELIGIOUS SERVICE.

The Bishop of Manchester, the Lord Mayor of Manchester, the Mayor of Salford, the Chancellor and Vice-Chancellor of the Victoria University, and officials of the Association attended the service in the Cathedral on the 23rd. The Archbishop of York was the preacher. In the course of his sermon Dr. Temple suggested that the advance of science was liable to create a sense of insignificance in mankind and thereby might operate against the sense of responsibility which was one necessary part of the religious man's existence. Yet it was part of all religions that every moral choice made by human beings mattered more than the course of the stars to God who made them all. All new knowledge of the world was and had to be new knowledge of God.

SOCIAL AND OTHER FUNCTIONS.

The annual dinner of the Association was held in the Free Trade Hall on July 25th, Prof. A. H. Burgess presiding. Covers were laid for 600 guests, and more would have attended had it been possible. After the loyal toast ("The Duke of Lancaster"), Dr. W. J. Mayo proposed "The Cities of Manchester and Salford," recalling the fact that his father was a student in Manchester under John Dalton, and that the *Guardian* was quoted all over the United States as a sound, logical, honest, and fearless paper. Alderman Davy and Councillor Collins, in reply, both claimed Dalton, and made play of the administrative problems of two communities situated at each others' doors. Dr. A. T. Bazin, President of the Canadian Medical Association, invited the company to toast the sister Association, and Dr. H. B. Brackenbury, in responding, took the chance of setting out what the B.M.A. was and what it was not. The toast of "Our Guests" was proposed with infinite humour by Sir StClair Thomson, and responded to in the same vein by Judge T. B. Leigh. Lord Moynihan, proposing "The President," spoke of him as an "artist" in his craft. Prof. Burgess thanked all who had contributed to a successful meeting (not excepting the "Clerk of the Weather"), and especially the local general secretaries, Dr. E. Bosdin Leech and Dr. R. G. McGowan.

Honorary degrees were conferred upon a number of distinguished visitors at a congregation of Manchester University, held in the Whitworth Hall on July 24th, the Earl of Crawford and Balcarres presiding. The degree of Doctor of Laws was conferred on Dr. C. H. Mayo, Dr. W. J. Mayo, and Lord Dawson of Penn; that of Doctor of Science on Dr. C. O. Hawthorne and Sir Ewen Maclean. In replying for the recipients,

including those whom he described as the "Heavenly Twins in Surgery," Lord Dawson said that the Public Orator, Prof. S. Alexander, had referred to Rochester as the Mecca to which all were drawn. To Britons, it was, he thought, more than that; it had played no mean part in strengthening the sense of unity between the free peoples on the two sides of the Atlantic. Among the problems to be faced by medical faculties was, he said, one of real importance at the present time; that was to try to bring about closer contact between the universities and the health services, not least to secure for the officers and workers in those services academic guidance and recognition.

On July 25th the Bishop of Manchester dedicated in the Eccles Parish Church a stained glass window, given by the Mayo brothers in memory of their father, William Worrall Mayo, who was born at Eccles in May, 1819, and died at Rochester, Minn., in March, 1911. In the inscription he was described as a pioneer, physician, citizen, a man of hope, vision, and achievement.

The Annual Exhibition.

An exhibition of surgical instruments and appliances, drugs, foods, books and the like, held in the City Exhibition Hall, Deansgate, from July 22nd–26th, was well arranged and attended. Some account of it will appear later.

COMBINED SECTIONS OF SURGERY, PHYSIOLOGY, AND BIOCHEMISTRY.

Abdominal Pain.

Opening Addresses.

Prof. E. D. Telford (Manchester) being in the chair, Dr. C. H. Mayo (Rochester, U.S.A.) opened the discussion by remarking that to-day the prize-fighter was not alone in his appreciation of the importance of the solar plexus. Abdominal pain, it was now generally agreed, was not merely a question of referred pain or of viscero-sensory reflexes. The structures in the abdomen were themselves sensitive to such stimuli as pulling—to undue contraction or distension. Even the solid organs, such as the liver and ovary, had proved themselves sensitive in operations performed under local anæsthesia, and it was well known that the puncture of an artery could be exquisitely painful. The parietal peritoneum was, of course, very susceptible to stimuli because of its rich innervation from the intercostal nerves, but the visceral peritoneum was also sensitive because of the white medullated fibres described by Langley in the splanchnic nerves. Dr. Mayo dealt at some length with the types of pain met with in gastric crises, their varying incidence, location, and duration, agreeing with Ryle that a more careful analysis of pain was necessary. He admired the contributions of the physiologists, and found Adrian's "Basis of Sensation" wholly delightful and extremely illuminating. Nevertheless, he concluded, "I think I have said enough to convince you that when the character and site of an abdominal pain tells something to the surgeon it does so not because he knows much about the underlying anatomy and physiology, but because he has encountered that particular pain many times before, and he remembers what he found when he opened the abdomen."

Sir Farquhar Buzzard (Oxford) spoke on a more general and philosophic plane. He reminded his hearers that pain was, to the moralist, a corrective, to the physiologist, a protective mechanism, to the clinician, it played its part in healing, but we were not primarily concerned here with the question of the usefulness or uselessness of human suffering. As regards the abdomen, he regarded the territory of the sympathetic nervous system as presenting problems fundamentally different from the ordinary reflex phenomena of skeletal muscle. It was Ross of Manchester who clearly separated somatic from visceral sensation. However great were our difficulties, we should not hide our ignorance behind a diagnosis such as psychalgia or functional pain, and he hoped for the abandonment of such loose terms as rheumatic, neuritic and neuralgic. Sir Farquhar also dealt with the problems of gastric crises, and thought we might come to a diagnosis in such cases "without the necessity of worrying the patellar tendons." He quoted Hilton, "Every pain has its distinct and pregnant significance, if we will but carefully search for it."

Discussion.

Mr. John Morley (Manchester) dealt with the views of Sir James Mackenzie on referred pain. He described some of the experiments he had made with Dr. Twining in which it was clear that the position of deep and sharply localised tenderness varied quite materially with posture, and again how referred pain could be proved to be referred, not from the viscus, but from the parietal peritoneum—e.g., from the diaphragmatic surface along the phrenics and to the shoulder. Dealing with the work of Weiss and Davis, in which the effect of local anæsthesia on the areas of referred pain had been investigated, he had repeated their experiments and in the main confirmed their findings. Their support of the Mackenzie view which they thence argued was, however, wrong, for in cases in which the abdomen was opened under spinal anæsthesia, a swab inserted under the diaphragm on one side caused referred pain in the corresponding shoulder, which could be abolished with local novocaine. If the swab were now transferred to the other side of the diaphragm there was extreme pain in the other shoulder, proving, since the spinal paths were blocked, that the impulses were spreading from the diaphragmatic peritoneum via the phrenic nerves. He regarded the application of analogies from the cardiovascular and genito-urinary systems to the intraperitoneal organs as most unfortunate, and maintained that Mackenzie's viscero-sensory and viscero-motor reflexes were twin phantoms, whose abolition would make diagnosis simpler and more accurate.

Dr. E. P. Poulton (London) thought that a reasonable physiological interpretation could be formulated to cover the facts of abdominal pain as at present known. He showed how, in a hollow organ, we should regard tonus rings simply as points where the tension is lower than elsewhere. Describing his experiments on the œsophagus, in which various arrangements of bags can be swallowed and held at different levels and the pressures within them recorded, he pointed out that pain was associated not with contraction but with relaxation. When and where the peristalsis was held up there was extreme pain, and the most severe type of colic was associated with such a hold-up of the peristaltic waves. He indicated how useful information about pain in the chest might be got by noting its relation to swallowing. If felt *after* swallowing the source of the pain was œsophageal. Other types of pain might be stopped entirely by swallowing, or made infinitely worse as in certain dyspepsias.

Dr. A. F. Hurst (New Lodge Clinic) thought it unwise to underestimate the importance of reflexes, and said that is was evident from what we knew of the gall-bladder and appendix that visceral pain was mainly due to distension. Localisation in space of the members of the body was mainly due to the impulses arising in muscles, bones, and joints, but there was no similar rigid fixation amongst the viscera. Where an organ was fixed, the localisation of pain was very accurate and informative, but not so in movable organs. In his experience the localisation of pain did not vary with the changes in position of the organ. Pain from the appendix was usually sharply and constantly localised. From the terminal ileum it was referred to the umbilicus, but from the pelvic colon it was merely felt vaguely above the umbilicus in the mid-line. Directly the distension passed from the pelvic colon to the rectum, the pain moved to the perineum, as in the normal call to defæcation. He was not convinced that referred pain in the Mackenzie sense did not exist, and thought that the better study of abdominal pain should do much to improve diagnosis.

Resumed Discussion.

After a brief interval the discussion was resumed under the chairmanship of Prof. H. S. RAPER (Manchester).

Dr. J. A. RYLE (London) said that he had not a great deal of confidence in the evidence got with balloons and the other devices of the experimental physiologist. The piecing together of the wealth of information afforded by clinical observations was more important, but this very wealth was bewildering, and it was seldom that Nature produced a clean experiment. Taking as a type of abdominal pain that associated with spastic constipation, he showed how it might be systematically investigated by ten questions dealing with its character and degree, its spatial relationships, its temporal relationships—duration, frequency, and special times of incidence—and the factors, if any, which were to be regarded as aggravating or relieving its severity. His thesis, from his observations on colonic pain, was that the pain of disease affecting a hollow viscus was in that viscus and was a function of its musculature, that visceral pain may be localised with considerable accuracy, but that when inflammation or severe mechanical stress were lacking referred somatic signs and symptoms were generally absent. He considered that the pain of organic visceral disease was itself evidence of a functional disturbance, and might be closely simulated by the pain of a functional disturbance, without organic disease. He did not suggest that an abnormal degree of tonic shortening or hardening was the sole or even the usual cause of pain in the hollow organs of the abdomen, for there were stresses, not considered here, whereby tension in plain muscle-fibres might be exaggerated with resultant pain.

Mr. V. ZACHARY COPE (London) said that he had cast aside his five pages of typescript, as their matter had already been covered. He had three points he would like to emphasise: (1) Pain from some areas was very accurately referred. Thus the pain referred from the diaphragm should not be loosely described as "shoulder" pain—it was subclavicular, acromial, or supra-spinous according as the focus was anterior, medial, or posterior on the diaphragm, with symptoms due to the stomach, the spleen or liver, or the duodenum or enlarged glands. (2) Localisation by means of the parietes might be impossible. Thus he had himself experienced acute hypogastric (testicular) pain from an appendicular abscess, and had met the same reference of the pain in others. Hunger-pains, associated with the pylorus, might be due to a focus, God knows where! (3) He would remind us how much parietal sensibility varies in different areas. Thus pelvic peritonitis was much less painful and slower in developing pain than the upper abdominal type—the two areas might be regarded as "silent" and "demonstrative" respectively. He agreed with Mr. Morley that the viscero-motor reflex was a myth, the symptom being due to direct irritation of the parietal peritoneum. He had a feeling built on clinical observations that the viscera had a very much larger representation in the *left* side of the brain than in the right—he even estimated the proportion as ten to one! He felt that in the discussion the speakers had not sufficiently differentiated spontaneous pain from that elicited by pressure. In appendicitis, for example, the former was a general hypersensitiveness in the right iliac fossa, whilst the latter could be sharply localised but varied with posture and the like.

Prof. A. W. SHEEN (Cardiff) thought that pain was the last guide for a surgeon to use, and regarded tenderness as a much greater help. He felt very enthusiastic about sympathectomy, as introduced by Leriche for inoperable tumours. In answer to the really important question: Is a surgeon to operate for abdominal pain? he had followed up a large number of non-operated and non-diagnosed cases, and all but one—an obscure case of gastric crisis—were well and working. He referred to severe abdominal pain in erythema multiforme, and said that one of his most popular lectures dealt with 30 causes of abdominal pain in which the surgeon should by no means interfere. It would be a good thing if one could have in hospitals a border-line ward, in which surgeon and physician could go round together.

Dr. A. P. CAWADIAS (London) said that in a consideration of abdominal pain there were three elements to remember—the visceral, the nervous transmission, and the cortical perception, and that often the neurological and psychological points of view were as important or more important than the purely gastro-enterological. Too little stress was laid on the neuritis of the splanchnic nerve, which might be due to an acute infection such as dysentery or to a toxic factor such as alcohol or nicotine. The central perception element could be treated by local novocaine, or by counter-irritation of any kind to inhibit the pain, or by shock therapy. He would plead for a broader conception of abdominal pain, neurological and psychological as well as surgical.

Mr. A. R. FLINT (Leeds) briefly described a case in which, after total gastrectomy, there were incessant hunger-pains. (Dr. POULTON explained that there were contractions and relaxations in the jejunum as in the stomach and œsophagus.)

Replies.

In his reply, Dr. MAYO said that he had been struck by the wonderfully gentle way in which the speakers had treated each other, even where they had serious points of disagreement. It was the general view to-day that surgery was too much the surgery of sacrifice—sacrifices which would have been saved had patients, appreciating the significance of pain, gone earlier to their physicians. Medical discussions were still too much concerned with gross disease—too often treatment was expectant until there was something to sacrifice. Clearly food was implicated as a factor in the ætiology of most of these cases, and in the Mayo Clinic much attention was now being devoted to the allergies and food peculiarities. Referring to the Leriche operation, even this might only be successful for some months, and cases should be treated before such grave indications arose. "I *do dislike* the acute abdomen—laparotomy after laparotomy" were his closing words.

Sir FARQUHAR BUZZARD thought that in the case referred to by Mr. Flint he might be dealing with a form of "phantom stomach." He had been particularly pleased with Dr. Ryle's contribution to the discussion, but was shocked by Prof. Sheen. For himself he believed that we could learn far more by listening longer to our patients, and he would emphasise the danger of stressing the indications afforded by tenderness, since this was a symptom vitiated by fear.

SECTION OF RADIOLOGY AND RADIO-THERAPEUTICS.

EARLY DIAGNOSIS OF CANCER OF THE STOMACH.

Prof. Haudek's Address.

Dr. W. J. S. BYTHELL (Manchester) being in the chair,

Prof. MARTIN HAUDEK (Wilhelminenspital, Vienna) opened a discussion on the value of X rays in the diagnosis of early gastric carcinoma. During the last decades there had been in Germany, said Dr. Haudek, an increase in the average duration of life from 38 to 57 years. From middle life onwards, cancer, next to cardio-vascular diseases, was the commonest fatal disease. In 35 to 40 per cent. of deaths from cancer the stomach was the site of the growth, and early recognition of gastric carcinoma was a most promising line of attack upon cancer. Now that X rays had been available in the diagnosis of cancer for 20 years, to omit their use in diseases attended by gastric symptoms was a professional error. Many thousands of cases of gastric carcinoma had been diagnosed by the aid of X rays, and the number of laparotomies at which incurable cancer was found had decreased (73·8 per cent. during 1901–14; 62·1 per cent. during 1915–25, Eiselsberg, Vienna). Unnecessary and merely exploratory laparotomies had also decreased in number, especially the latter. To the use of X rays also

belonged some of the credit for the increase in the number of resections for carcinoma—from 22–40 per cent. between 1908 and 1924. But 60 per cent. of operations were still undertaken too late. Any estimate of the possibility of further progress—concerning which he was himself hopeful—must involve a consideration of present causes of failure.

There were, he said, three main causes of delayed radiological diagnosis of gastric carcinoma. (1) *The latent period*, during which the disease presented no symptoms. (2) *Delayed X ray examination*, due to latency and to non-recognition of the gravity of the local symptoms by doctor and patient alike. (3) *Faulty X ray examination.* At one time the difficulties of radiology were underestimated. Too much importance was still attached to apparatus, and too little to the operator by laymen, and unfortunately, by many doctors. X ray examination was sometimes undertaken by men with only a little technical training. The result of an examination depended far more on the skill of the investigator than on the quality of the apparatus. The X ray specialist should have a thorough basic knowledge of pathological anatomy and internal medicine. Similarly, physicians and surgeons who carried out their own X ray examinations must be familiar with general radiology, and if not certain of their findings must consult a radiologist of experience. X ray consultations were far too seldom requested. Screen examination without radiography was another fault in technique, especially in the diagnosis of carcinoma, where a study of the "relief pattern" of the mucosa (as seen in good X ray films) was essential. For each examination about half an hour was required, and no more than six to eight consecutive examinations should be undertaken. The investigation may require to be completed the following day. Superficiality and fatigue were inevitable if even an experienced radiologist was required to undertake 20 or 30 examinations in a few hours, as in some hospitals. The results might be only 10 per cent. worse, but what patient would like to be among the 10 per cent. in whom a cancer of the stomach was recognised too late?

Technique.—There was, said Dr. Haudek, no standard technique in gastric investigation. He commenced himself by taking an accurate history of the illness, as a frame into which the X ray findings fit. Before the abdomen was examined the chest was screened. The cause of symptoms hitherto attributed to the stomach might be thus shown to be aneurysm, pulmonary tuberculosis, malignant pleurisy, pulmonary metastases, or bronchial carcinoma. With the patient standing on a low footstool, the abdomen was palpated for increased tension of the recti, localised tenderness, or resistance. Four hours earlier the patient has taken for the motility test a meal of thick gruel containing 70 g. of barium sulphate. Apart from the large residues significant of pyloric stenosis, a small remnant might be visible as a "surface film" of an ulcerated carcinoma. The second meal consisted of about 300 c.cm. of a mixture just fluid enough to swallow, containing 120 g. of barium. The patient first drank one large mouthful, 20–30 c.cm., which was followed down the œsophagus. If there was any delay or dysphagia he gave a small gelatin capsule, containing one gramme of barium. If this, followed by a drink of water, passed undelayed through the cardia, malignant stenosis could be excluded, but the arrest of the capsule was of great service in the diagnosis of cancer of the cardia, whether originating there or in the stomach. When it reached the stomach the first mouthful of 30 c.cm. of suspension was dispersed by compression with Holzknecht's "distinctor" or a pad. The folds of mucosa were thrown into relief by a thin film of barium, and thus the whole stomach wall could be examined, unless retained secretion interfered (by dilution of the paste) with this study of the "relief pattern." Central shadow defects, or furrows between the lobes of a medullary carcinoma, led to a definite diagnosis of tumour. The borders of benign growths were circular and well defined. The stomach was then filled with the remainder of the suspension, and screened at different angles, the contour, the flexibility of the walls, and the peristaltic movements being studied. If in atonic, dilated stomachs the crescentic barium shadow did not reach the lesser curvature in spite of pressure, the patient was laid upon a couch on his right side for a few minutes and re-examined. He attached great importance to examination in the prone position for the study of peristalsis along the lesser curvature. A flat infiltrating growth on the lesser curvature might cause no disturbance of peristalsis along the greater curvature which alone could be studied in the erect position. In his opinion the examination of peristalsis on the lesser curvature (with the patient prone) rendered superfluous the expensive apparatus required for Fränkel's cinematography.

In the majority of cases Dr. Haudek found a single X ray examination to be sufficient, but if the motility test had shown retention of food or secretion, a second examination was required on the following day. Having taken only liquid food on the evening of the first examination the patient returned next day in a fasting condition, and before examination lay upon his right side for at least two hours, with the pelvis raised. The pylorus thus became the lowest point, and the stagnant contents were evacuated more completely than with a stomach-tube. About 50 c.cm. of very thick barium cream were then introduced into the empty stomach, and the examination of the relief pattern made as described; finally the gastric contour was examined with the full drink. If the method described failed, there was either pyloric stenosis, due to cancer or ulcer (which could be ascertained), or there was high-grade hypersecretion due to ulcer. To distribute the contrast substance Holzknecht's distinctor, or one or both hands were employed. The speaker did not use lead rubber gloves, relying on the thickness of the patient's body as a protective medium.

The number of very small growths discovered in the earliest stage was small. A much larger number of operable tumours had been sent to operation, but most numerous had been those in which inoperability has had to be reported. He showed on the screen a dish-shaped tumour which, with the stomach completely filled, might easily be confused with an ulcer niche. In the relief pattern, however, the folds of mucosa terminated abruptly before they reached the carcinomatous crater, whereas they converged upon an ulcer niche. Another slide showed an operable growth at the pylorus. The radiologist's interpretation and the histological report were in agreement that the lesion was a carcinoma, though at the macroscopic examination it had been assumed that an ulcer was present. Circumscribed scirrhus almost always originated on the lesser curvature just proximal to the pylorus, and the greater curvature was drawn towards the lesser as a "spigot" formation. In prepyloric ulcer and benign thickenings the lesser curvature was flattened, and the convexity of the greater curvature is maintained. Medullary carcinoma, even when near the cardia, was the most favourable type of tumour, both in case of diagnosis and operability. Characteristically it showed a central filling defect like a benign tumour, but the latter might sometimes be differentiated by its well-shaped edge, or pedunculation. The radiologist should never assume the responsibility of delaying operation because he considered a tumour as probably non-malignant. Another slide showed a commencing adenocarcinoma high up in the body of the stomach, clearly visible in the partly filled stomach, but impossible to demonstrate with the stomach completely filled. In no single clinically suspicious case in which he had excluded carcinoma during the post-war period had the disease, said Dr. HAUDEK, been later shown to exist. Erroneous diagnosis of cancer was most frequent in the pars pylorica, and the differentiation of ulcer and cancer was most difficult there because ulcers of the pars rarely show niches, and were often accompanied by considerable submucous œdema, which caused irregularity, and by spasm. Thirty

per cent. of prepyloric ulcers underwent malignant degeneration compared with 3 per cent. in the pars media. He referred to investigations upon the significance of gastritis in early diagnosis of cancer (Orator). If it became possible anatomically to distinguish precancerous gastritis from that associated with ulcer, resection of precancerous gastritis would represent the early operation for carcinoma (Konjetzny).

Discussion.

Dr. A. E. BARCLAY (Cambridge) acknowledged the deep indebtedness of radiologists to Prof. Haudek, whose pioneer work had guided him from the outset of his radiological career. He recalled some early failures and early successes in gastric diagnosis, and emphasised that then, as now, he had learned to take nothing for granted—not even the correctness of an adverse operation report. Definite lesions shown in the radiogram can be overlooked at operation. He agreed with the opener in stressing the importance of critical study of the mucosal folds, and of the value of the sign of disappearance of the folds in carcinoma in contrast to their convergence in ulcer. He had not used the opaque capsule for diagnosing growth at the cardia, but used a bismuth bolus. He asked Dr. Haudek whether he could give an explanation of the rapid emptying often noted in early carcinoma wherever situated in the stomach. He felt strongly that re-examination by the radiologist in suspicious cases should be conceded far more willingly by both patient and doctor than was the case at present. A single examination, however painstaking, might sometimes leave a doubt, which re-examination would definitely confirm or dispel. He deprecated overloading the radiologist, especially in hospitals and clinics. Early diagnosis depended first, foremost, and all the time on the knowledge and skill of the investigator.

Dr. J. C. BULL (London) commented on the highly significant fact that in the post-war period the Opener had not had a single negative carcinoma diagnosis disproved by operation. He then showed slides illustrating spasmodic contractures simulating earliest carcinomata; in these cases operation or subsequent course had established their innocent nature. He had found belladonna, so strongly advocated by Carman, disappointing in abolishing these spasms. The speaker emphasised, from his own experience as a clinician practising radiology, that no single method was so valuable as the radiological in diagnosing gastric cancer.

Dr. GILBERT SCOTT (London) said he regarded Prof. Haudek as the patron saint of the direct method in opaque meal work; his technique should be standard for all routine work, not only for carcinoma. Dr. Scott himself had always advocated systematic radioscopic palpation with the small "white-wash" meal. Immediate complete filling was a common source of error. The rugae must be examined in detail. With regard to the surface film often retained on the carcinomatous surface, research should be directed to finding the most suitable consistency of meal to cause such a deposit; watery solutions often failed to give it. He deprecated taking a preliminary history, which was bound to bias the report. He examined first and took the history afterwards. He referred to the difficulty in distinguishing large chronic ulcers from carcinomatous ulcers; it was not his habit to make a diagnosis of carcinoma, but to report an organic lesion. Pyloric carcinoma with dilatation of the stomach showing paradoxical feature of ready passage of pylorus by contents indicated old chronic pyloric ulceration on which malignant disease had been subsequently grafted. The ulceration resulted in obstruction with dilatation, but when carcinoma converted the pylorus into a rigid tube obstruction was relieved. He thought the chief reason for delayed diagnosis was the latent period. He discarded indirect evidence, such as local tenderness, rigidity, and rate of emptying, if this were the sole evidence obtainable, and relied entirely on direct evidence. He hoped Prof. Haudek's paper would not lead the inexperienced worker to subject patients to unnecessary laparotomy on the strength of minute, imperfectly understood, variations of the normal contours. He asked what value he attached, in differentiating simple from malignant lesions, to the occurrence of persistalis right up to the edge of the visible lesion. As regards operability, it was Dr. Scott's habit to confine himself to a statement of the extent of the lesion, leaving the question of operability to the surgeon; the operative findings were supplied him in every case.

Dr. W. H. ROWDEN (Leeds) said he found half an hour too little for an examination. He used a technique similar to Prof. Haudek's, and also insisted on the prone examination. He had found it a help to bring the tube close up under the patient in watching peristalsis in this position, since this exaggerated the size of the peristaltic wave. In taking serial pyloric radiographs the interval should be a minute or longer. Normal radiograms at such intervals never gave two exactly similar pictures, but serials at shorter intervals might do so even in a normal case. Like the opener, he had found an increase in the number of actual resections, indicating an improvement in early diagnosis. As regards pyloric obstruction, one point was of value in differentiating simple from malignant obstruction; obvious pyloric obstruction at the cancer age with a small stomach was invariably due to malignant involvement, with a large stomach it was almost invariably non-malignant.

The PRESIDENT had felt for some time that a definite diagnosis of malignant disease of the stomach ought to be obtained more frequently than in any other condition examined by an opaque meal. With careful examination and improved technique it should soon be possible to put the early diagnosis of gastric carcinoma on a very sure basis. He referred to the difficulties due to extrinsic tumours, particularly of the head of the pancreas, and instanced two such cases simulating gastric carcinoma.

Reply.

In reply, Dr. HAUDEK said the double meal method which he had introduced 20 years ago, with a six-hour normal emptying limit, had been an improvement on previous methods, but he had now come to rely upon direct signs. Alterations of emptying rate were of secondary importance, often purely functional. Rapid emptying, for example, could occur in many conditions, and could not be relied on for establishing early diagnosis of carcinoma. The rapid emptying seen in carcinoma, to which Dr. Barclay had alluded, he ascribed to rigidity of an infiltrated pyloric end, in which, though the lumen was reduced in calibre, there was a failure of the pylorus to close. Six-hour residues were commoner in ulcer than in cancer, and usually larger. He warned against over-estimating the importance of rapid emptying and delay. Dilated stomach was common in ulcer, rare in cancer. Hyperperistalsis, a common functional disorder, was of little value in diagnosis, but anti-peristalsis usually signified an organic lesion. Most important was the interpretation of normal peristalsis. For this the prone position was essential, and he thought it a fallacy in Fränkel's cinematographic method that the standing position was used by that worker. This position failed to show the highly important lessercurvature peristalsis. He agreed with Dr. Bythell that extrinsic tumours might cause difficulties, but the examination of the mucosal relief and the pliability of the gastric walls generally excluded such conditions. Dr. Rowden was in error in thinking 20 minutes to half an hour was all he required for a gastric examination. This was an average figure; many carcinomas were diagnosed in the first few seconds. In a difficult case unlimited time was allowed. As regards a case history, he often had to do without it owing to language difficulties in a mixed population; its importance lay in suggesting some further examination when the stomach was negative. The X ray examination only made an anatomical diagnosis. For the full diagnosis the history was

necessary, and Dr. Haudek said his colleagues often welcomed his general opinion of the case based on examination of many thousand cases.

SECTION OF OCCUPATIONAL DISEASES.

Occupational Dust.

Dr. W. F. Dearden being in the chair, the discussion was opened by Dr. J. C. Bridge, H.M. Senior Medical Inspector of Factories, who remarked that it was in Manchester he joined the Factory Department as a medical inspector, one of his earliest duties being to inquire into an outbreak of "weavers' cough" at a spinning mill. The works of Arlidge and Oliver, he said, were full of valuable mortality statistics for various industries, and Collis, in his Milroy lectures for 1915, dealt fully with the effect of dusty occupations and mortality-rates, emphasising the effects in particular of the dusts of free silica (SiO_2). The inquiry of Dr. Dearden, Milroy lecturer in 1927, into the health of workers in humid cotton sheds and the printing industry, had been carried further by Dr. Bradford Hill.

For himself, said Dr. Bridge, he could do little but indicate some of the more common forms of injury to health produced by occupational dust. He proposed to divide such effects into two arbitrary groups, realising fully that some might fall into both groups, and that others, in the light of better knowledge, should be included in both. These were: Dusts which exercised (*a*) a general toxic effect; (*b*) a localised effect, whether (1) internal, or (2) external.

Group A. Dusts: General Toxic Effect.

This group consisted mainly of the dust of certain metals, and chiefly their salts, which produced a definite syndrome of symptoms. Of these probably the most important, and one which was still met with most frequently, was lead and its compounds. *Lead* poisoning still figured prominently in the notifications made to the Chief Inspector of Factories. (Dr. Bridge gave comprehensive tables of case-incidence and mortality for various industries.) To one point in connexion with lead excretion he drew special attention. Kehoe and other American observers found that lead was excreted in measurable quantities in the urine of normal healthy persons who had not been exposed to any known risk of lead absorption. These findings were confirmed by Prof. Chaston Chapman, and were important because the presence of small quantities of lead in the urine had been regarded as confirming the diagnosis of lead poisoning in a lead worker.

Arsenic.—The classical symptoms due to the inhalation of dust containing arsenical compounds did not often occur in industry. In general, the effect of arsenical dust was manifested by localised affections of the skin.

Manganese.—In 1922 Dr. J. R. Charles, of Bristol, drew the attention of the Department to two cases of manganese poisoning affecting men employed in grinding manganese ore. Other cases had been reported in America in the manufacture of manganese steel. (Dr. Bridge gave the symptoms of manganese poisoning in detail, and dealt with poisoning by zinc, cadmium, and the nitro and amido derivatives of benzene.)

Organic Dusts.—Dusts might act as carriers of toxic substances or organisms, and produce symptoms of a general character. Fur dust after carotting—that is, painting with nitrate of mercury—had produced mercurial poisoning. Wool sorters' disease was due to the inhalation of dust carrying spores of the anthrax bacillus. Of special interest to Lancashire was the condition known as "weavers' cough," which might be due to the inhalation of the spores of a mildew. Closely allied was the cough affecting men working in malthouses. No doubt there were other dust-borne diseases due to the presence of a fungus.

Group B. Dusts: Localised Effects.

The most important and widespread forms of localised internal disease produced by dusts were the various forms of pneumonoconiosis, of which silicosis was the most important. The recent scheme for compensation under the Various Industries (Silicosis) Scheme gave some indication of the widespread nature of the industries in which dust containing free silica occurred. Dr. Bridge mentioned the fine type of fibrous pneumonoconiosis produced by silicates and other minerals, and the effects of the inhalation of coal dust upon trimmers. In time, he said, with a more complete survey of workers exposed to particular dusts, it might become possible to determine the particular form of dust by the character of the fibrosis to which it gave rise.

Vegetable Dusts.—Of the effects of these on the lungs little or nothing was known, but Dr. Middleton concluded that the dust in the case of wheat, barley, rye, and oats contained hairs derived from the grain which on a priori grounds appeared to be capable of causing irritation of, and inflammatory changes in, the respiratory passages. Dr. Bridge quoted the case of a woman employed for 25 years at a bench where she had been exposed to inhalation of pure tobacco dust, and who suffered from loss of sight. He also drew attention to Dr. J. B. Duguid's article (The Lancet, 1927, ii., 111) on the incidence of intrathoracic tumours in Manchester.

Turning to the localised external diseases produced by occupational dust, there were, said Dr. Bridge, few if any dusts occurring in industry that would not produce in certain individuals an inflammatory condition of the skin. This not only made it difficult to decide whether or not a dermatitis was of occupational origin, but threw doubt, in many cases, on the actual causal agent. From his own experience the dusts which appear to exert the most rapid and severe conditions were the nitro compounds of benzene and its homologues—for example, dinitrochlorbenzene, picric acid, paranitraniline. Of simple compounds the sodium and potassium salts of chromium and the caustic alkalis produced not only skin lesions, but ulceration of the mucous membrane and septum of the nose leading to complete perforation. The absence of untoward symptoms following such definite destruction of the internal nares was a matter of surprise. Cancer of the skin was produced wherever pitch dust was generated, and the connexion between cancer and arsenical dust was well established. The oldest form of cancer of the skin—namely, that of the chimney sweep—still occurred. Dr. Bridge concluded by saying, "While once the masters of cure, we are now, or ought to be, the slaves of prevention. A dust-free industry may be ideal, but it should be our goal."

Asbestos Dust.

Dr. W. E. Cooke (Wigan) read a paper on asbestos dust, and the curious bodies found in pulmonary asbestosis. Asbestos, he said, was woven into cloth before the time of Herodotus 450 B.C., but pulmonary asbestosis dated only from A.D. 1900. After describing the chemistry and microscopical appearances of asbestos fibre and dust, and the presence of large particles of the dust in fibrotic and necrotic areas of the lung, he detailed further experimental work on the curious bodies found in this disease. His explanation of their formation was that fine spicules of asbestos, by mechanical action on the bronchioles and alveoli, caused either minute extravasations of whole blood or serous exudates which enveloped them. Interaction took place between the plasma proteins and the soluble fraction of asbestos with adsorption of colloidal aggregates on to the spicules. In support of this he showed specimens containing a slender filament of biotite upon which colloidal matter had been deposited. As these bodies had been found in every autopsy in this disease, and as the only mineral that could possibly produce them was

asbestos, their presence in any numbers was pathognomonic of pulmonary asbestosis.

Dr. A. C. HADDOW (Leeds) described the clinical aspects of asbestosis, and quoted a case in which the curious bodies were found in a man who was not employed in the industry, but who lived next door to an asbestos factory. This result was confirmed by Prof. J. M. Stewart (Leeds).—Dr. W. BURTON WOOD (London) showed X ray photographs of cases of pulmonary asbestosis and compared the picture with that of silicosis.—Sir THOMAS OLIVER (Newcastle) also spoke on the clinical aspects of the disease.—Sir THOMAS LEGGE (formerly H.M. Medical Inspector of Factories) said there could be no doubt of the seriousness of asbestos poisoning among the workers in that material. The idea that nothing but free silica dust would set up fibrous changes in the lungs had had a very bad effect, and the foregoing papers showed how important it was not to underrate other kinds of dust such as asbestos. He hoped to see asbestosis added to the list of diseases for which compensation could be obtained.

Reviews and Notices of Books.

CARDIOLOGY.

The Heart in Modern Practice. Second edition. By WILLIAM DUNCAN REID, A.B., M.D., Assistant Professor of Cardiology, Boston University. London: J. B. Lippincott Company. 1929. Pp. 466. 25*s.*

THE second edition of this text-book differs from its predecessor principally in the addition of nine new chapters dealing with the cardiac arrhythmias. This is hardly an improvement, for, as the author admits, it completely alters the balance of the book, which was its chief merit. One of the greatest difficulties of a student is to get a good sense of proportion and to see the various facts of medicine in their true perspective. For many years heart murmurs were the centre of attraction, more recently they have been superseded by the arrhythmias; but now that these are beginning to fade into the background and find their true level, it is no longer desirable to give them such a prominent place. Among the many minor alterations are the sections dealing with circus movement and coronary infarction, which constitute valuable additions. The electrocardiograms used as illustrations are clear and well reproduced, though we prefer actual polygraphic and sphygmographic tracings to diagrammatic ones. The numerous references to recent original papers will be appreciated by those who wish to study each subject more deeply; but compared with the more modest first edition this volume is on the whole disappointing.

The Pressure Pulses in the Cardiovascular System. By CARL WIGGERS, M.D., Professor of Physiology, Western Reserve University, Cleveland, Ohio. London: Longmans, Green and Co. 1928. Pp. 200. 14*s.*

IN cardiovascular mechanics the history of the development of the instrumental method of investigation provides frequent examples of erroneous conclusions resulting from the failure of workers to recognise mechanical artefacts. As one instrument supersedes another, new features make their appearance in the records. Often these have been attributed to the fundamental processes under investigation, when in reality they have been produced by the physical properties of the apparatus. In recent years it has been the aim of experimentalists to devise instruments in which inertia is reduced to a minimum. Dr. C. Wiggers, being a pupil of Otto Frank, has naturally devoted his attention especially to optical methods of registration, and has collected in this monograph his own observations on this subject and those of other workers. The two opening chapters are devoted to a critical review of the instrumental artefacts which vitiate or modify the form of the records obtained. There follows a series of chapters dealing with the pressure changes and sequence of events within the heart, arteries, and veins, and a consideration of the various factors such as heart-rate, venous filling, and aortic resistance which may modify the normal sequence of events. The author points out that ventricular as well as auricular systole is a fractionate process, and considers the bearing of this fact on the interpretation of the intraventricular pressure curves. In the final chapter he deals with the way in which the commoner types of arrhythmia may modify the mechanics of ventricular systole. To the clinician who lacks a thorough grounding in physics it may prove stiff reading, but it should be read not only by the physiologist, but by all those who are especially interested in the study of heart disease, since so many of the problems considered have a direct bearing on the practice of medicine.

This book forms one of the Monographs on Physiology, formerly edited by the late Prof. Ernest Starling, which are intended to review the present position of our knowledge in those departments which have advanced most in recent years.

Heart Disease in Childhood. By H. B. RUSSELL, M.D., M.R.C.P., and C. K. T. HAMILTON, B.M., M.R.C.P. London: Constable and Co., Ltd. 1929. Pp. 104. 7*s.* 6*d.*

Heart Disease in Childhood is such an attractive title that it is a pity the authors have not kept more closely to their subject. Such descriptions as that of the electrocardiographic method, for example, cannot, by any stretch of the imagination, be legitimately included; the book suggests an elementary treatise on general cardiology which has been modified in order to render it applicable to the cardiac affections of childhood. Rheumatic heart disease is discussed in considerable detail, but the subject of congenital lesions is dismissed in eight pages. It is surprising that the old hypothesis of "back pressure" should still find a place in one of a series of Modern Medical Monographs. On the whole it is our impression that the authors have inserted quite a lot of irrelevant matter, while they have failed to make the most of their material.

What you should know about Heart Disease. By HAROLD E. B. PARDEE, M.D., Assistant Professor of Clinical Medicine, Cornell University. Philadelphia: Lea and Febiger. 1928. Pp. 120. $1.50.

HEART disease to the lay mind is apt to be associated with the idea of sudden death and it is often difficult for people to realise that in its milder forms it is not necessarily progressive, and may, in fact, be compatible with a fairly active life. The object of Dr. Pardee's little book is to elaborate this thesis in language intelligible to the general public, to explain the nature of heart disease and the reasons for the various therapeutic measures employed. By so doing the author hopes to achieve a more intelligent coöperation between patient and doctor and so to enable them to work together to the best advantage. There is an admirable chapter on exercise and rest and the question of diet is fully discussed. Dr. Pardee gives perhaps too optimistic an impression of prognosis, but that is excusable, for he is deliberately out to counteract undue pessimism. His book will undoubtedly be of real value to many sufferers from heart disease, for while avoiding technical terms he has succeeded in giving an accurate, up-to-date and well-balanced account of its more important aspects.

QU'EST CE QUE LA MÉDICINE ?

By E. RIST. Paris: Masson et Cie. 1929. Pp. 235. Fr. 25.

THIS is a thoroughly interesting book of essays, displaying a wide range of general and special knowledge, while its pages are full of the love of history and the appreciation of art. The essay on the Hippocratic oath is one of the best sermons on the sanctity of medical confidence we have read, and the accompanying essay on the moral responsibilities of the doctor is a direct development of the old Greek's words. The essay on the diagnosis of the diseases of the chest before the methods of percussion and auscultation were applied—the dates of these two classic methods of exploration being 1761 (Auenbrugger) and 1819 (Laënnec)—is a sound study, while Les Débuts de la Percussion is a development of this essay and leads up to a general chapter on the progress of our science. Here is a serious lecturer at his best—wise, but not didactic, not flippant, but never dull.

MADNESS IN SHAKESPERIAN TRAGEDY.

By H. SOMERVILLE. With a preface by WYNDHAM LEWIS. London: The Richards Press, Ltd. 1929. Pp. 207. 6*s*.

Mr. Somerville, in a series of interesting essays presenting modern as well as accepted views, deals with the old subject of madness as represented in Shakesperian tragedy, stating his conclusions well and justifying them, where he can, by references to the text. The characters selected for comment are, save perhaps one, familiar to the whole world—their words and their deeds may be said to form a part of universal education. Such characters are Hamlet and Ophelia, Macbeth and Lady Macbeth, Lear and Goneril, Othello, Brutus and Constance, the last being the only one of whom many things cannot be immediately recalled save after a recent reading of "King John." She is best remembered by the terrific words in which she courts death, words which, as Mr. Somerville points out, could not have been used by a person so mentally destroyed. But even though there may be a difficulty in reconciling the coherency of language with the disorganisation of mind, the picture of a battered mentality is vividly presented; and here the author points out that quite early in his creative activity Shakespeare realised the value of insanity as a means for the exhibition of the excessive emotion necessary to the violence of his tragedy. He might have added that in Elizabethan days the insane lived largely with the sane, and were, therefore, more easy subjects for study than they became when segregation was the rule. Constance is selected for particular comment because the rising tide of insanity can be watched throughout a story, at the commencement of which she is perfectly sane; thus we have a fine exhibition of the early growth and development of acute mania. To Hamlet's madness he thinks the type manic depressive most nearly corresponds; Macbeth he labels a paranoiac; Lear, a victim of attacks of acute mania, who, if he had lived, would have been a hopeless dement; Ophelia has the temporary mental overthrow of the girl madly in love; Timon is a sound typification of megalomania; while Brutus's mental breakdown is found convincingly to have many features common with that of Macbeth. Goneril is described as a mental monstrosity, the words implying that anyone so foully wicked could be nothing but mad, while Lady Macbeth more or less escapes analysis—her response to horrible circumstances is a lapse into mad criminality.

The various views in the essays may be exactly regarded, in the author's words, as "attempts to explain some of the difficulties occurring in the speeches, as well as those arising out of the strange and puzzling behaviour of the principal characters during their attacks of insanity." The explanations are for the most part satisfying; they could not be expected to cover the field.

THE MODERN DANCE OF DEATH.

The Linacre Lecture for 1929. By PEYTON ROUS. London: Cambridge University Press. 1929. Pp. 51. 2*s*. 6*d*.

A MODEST little book which is worth careful study and a good deal of reflection. It should be widely read by the hygienist on the one hand and the experimental pathologist on the other. We flatter ourselves that medical science has enormously reduced the incidence and fatality of most diseases and we are apt to forget that the body is just where it was; it has now just the same potentialities and limitations as it had, when infectious diseases left a much smaller porportion of the population to realise that there was a natural end. We dance with death now as we did, but less reluctantly—for it is towards the end of the evening and we are getting tired. Such in brief is the tenour of Dr. Rous's sermon. As he gave it, it is a brilliant commentary on life and individuality, full of shrewd discourse about the hard facts of experimental medicine to which he has himself made such notable contributions. Those who do not care for the philosophy will find the pathology of the best.

STONES, HILLTOPS, AND THE SEA.

By RUTH ALEXANDER. London: Alston Rivers. 1929. Pp. 272. 12*s*. 6*d*.

THIS is a record of a month's travel enjoyed by the author in company with some twenty other people. The party toured the Eastern half of Yugoslavia in two motor char-à-bancs, and met with many small adventures and many large opportunities of learning what life is like in a very unfamiliar part of Europe, opportunities which have been well used in this book. The journey covered Slavonia, Croatia, Bosnia, and Herzegovina, still replete with the signs of Turkish rule, Montenegro, and Dalmatia, with its Italian enclave, and Miss Alexander has noted with discriminating enthusiasm and humour the extremes of fertility and barrenness manifested by the landscapes and the variety of religious tongues, and clothes offered by the populated centres. This is a gay account of a jaunt which, it can be gathered, was thoroughly successful in the event though often trying in its experiences. Some of the many picturesque scenes are reproduced from photographs supplied by two of the author's fellow-voyagers, Dr. G. A. Grierson and Dr. V. G. Ward.

AN OUTLINE OF ENDOCRINOLOGY.

Second edition. By W. M. CROFTON, B.A., M.D., Lecturer of Special Pathology, University College, Dublin; Pathologist, Dr. Steevens' Hospital, Dublin. Edinburgh: E. and S. Livingstone. 1929. Pp. 163. 8*s*. 6*d*.

THIS is the second edition of Dr. Crofton's handbook of endocrinology, originally published in 1924. There are several additions to the text, notably a chapter on the liver chiefly dealing with pernicious anæmia (which, in spite of Minot and Murphy's valuable work on liver treatment, should surely not call for comment in a handbook devoted to endocrinology), and a chapter on recent advances. Many of the views expressed in this chapter are drawn from the author's own experiences, which appear to be so divergent from current medical opinion that they cannot be accepted without reserve. Nevertheless, there is much which is of interest in this book, though flights of fancy such as the following (p. 149) are scarcely to be commended to a serious student of medicine: "There is apparently no gland yet developed that will enable man to grow wings. Must we wait for the millennium until such a gland of internal secretion develops?" Perusal of this book leaves the impression that this happy state can hardly be long delayed. In the meanwhile the medical student interested in endocrinology would be well advised to follow the teaching of more generally accepted text-books of medicine.

THE LANCET.

LONDON: SATURDAY, AUGUST 3, 1929.

MILDER VACCINATION.

WHETHER post-vaccinal encephalitis is directly due to vaccination or whether it can be ascribed to a concomitant infection must be considered unsettled, though it might be argued that the evidence in favour of vaccinal encephalitis is at least as strong as that which is regarded as establishing the ætiology of some other diseases. The fact remains, however, that the number of cases of encephalitis following vaccination appears to be increasing, and recent inquests on such cases have caused a good deal of concern among the public. The increase is perhaps only apparent. It may be that in the past mild cases were not recognised for what they were, and that the association of fatal cases with vaccination was disregarded; but this does not alter the situation for the layman who sees in vaccination sinister possibilities which he had never before contemplated, and who is troubled by a suspicion that the knowledge of these dangers has been withheld from him. The suspicion is void of foundation, for it is only within the last six or seven years that the nervous complications of vaccinia have been recognised in medical circles; within that time, moreover, the Ministry of Health has appointed two distinct committees to consider various aspects of vaccination, and their reports were published together a year ago. The final recommendation of the Rolleston report (which we endorsed warmly at the time [1]) was that steps should be taken to impress upon the public mind the nature and purpose of vaccination, for which the report affords a body of accurate and unbiased information. Unfortunately this recommendation of the Committee has been ignored. No real attempt has been made to instruct the public on the nature of vaccination; to explain its advantages; to acknowledge its complications; and to discuss whether, on the whole, it is to be recommended.

The layman of to-day is too much interested in medical matters and too much alive to their importance to be impressed by mere dogmatic statements. Simply to assert that universal vaccination is necessary in the interests of the public health, and that the direst results are likely to follow its discontinuance, is not to convince him. He requires a reasoned argument and will not be satisfied with anything less. The situation is not rendered any easier by the fact that alastrim has been evident in this country for the last decade and has by its mildness done much to rob the name of small-pox of its terrors. It is true that from time to time there are outbreaks of virulent small-pox with a high proportion of fatal cases, but energetic action by the health authorities has hitherto kept them in control and they have scarcely served to remind the public what a dreadful scourge the disease was in this country not so many years ago. On the other hand, some hundreds of cases of alastrim are notified as small-pox every year, most of which are no more severe than simple chicken-pox. It is perfectly reasonable that the layman should say: why, if this is all that small-pox means, should I worry about vaccination, which apparently is itself more dangerous than the disease from which it is supposed to protect me? It is no good answering that this mild type of small-pox may at any moment change to the virulent form, for this is probably not true; American observations seem to show that for 20 years alastrim has bred true and has remained relatively innocuous. The right reply is that for all practical purposes alastrim differs so much from classical small-pox as to be a distinct disease, and that its mildness does not justify us in neglecting to take proper precautions against the more malignant form of small-pox.

We are left then with the question what precautions the profession should advocate in the circumstances of to-day. There can be no doubt that in an epidemic of severe small-pox the public would accept vaccination without much opposition, but as we pointed out two and half a years ago [2] there is enough sense in the average man's objections—when supplemented by the nonsense of the antivaccinists—"to make universal and full vaccination of infants (as theoretically enforced by Parliament) impracticable in this country at the present time." The first alternative to universal protection, we said, was to let small-pox take its course, offering vaccination to those who preferred it. The second was to modify our methods of vaccination so that sensible people would have no reason to fear and dislike them. The third was to abandon universal vaccination altogether in favour of the effective treatment of contacts in face of an epidemic. Criticism might be lessened, we pointed out, "if such vaccination aimed at conferring only brief and temporary immunity, and it is theoretically possible to check the progress of an epidemic by using an antigen producing symptoms so far negligible that popular prejudice would soon fade away." In the same article we quoted a method suggested by Dr. PARLANE KINLOCH for milder vaccination in infancy, and a few months later we published an account of American views and practice [3] which included a description of means whereby the least possible "take" may be secured. Meanwhile the Rolleston Committee has made its definite recommendation that a trial should be made of vaccination (or revaccination) in one insertion with a minimum of trauma.

In the B.M.A. discussion reported on p. 223 considerable dissatisfaction was expressed with the quality of the lymph available for the use of private practitioners, and from more than one quarter the demand was expressed for the universal supply of Government lymph. It was claimed that the lymph of private firms was unequal in its action, at some times failing to produce reactions, and this is probably true. But the statement in one of the proposed resolutions that in some vaccinations the health of the patient is seriously affected is surely far more significant than the complaint that certain lymphs are ineffective. As the Vaccination Committee pointed out, unsuccessful vaccination is very often due to faulty technique; but an excessive reaction suggests that the virus is too potent or the dose administered too great. It is probable enough that the method of four insertions officially advocated in this country gives the most efficient protection against

[1] THE LANCET, 1928, ii., 234.

[2] Ibid., 1927, i., 238.

[3] Ibid., 1927, i., 671.

small-pox, but we have ample evidence that its use is occasionally associated with severe local and general reactions, and we have the definite opinion of the Rolleston Committee that a different procedure should be tried. American and Canadian results suggest that vaccination and revaccination in one insertion is efficient, and though the actual duration of the immunity conferred is, of course, still uncertain, the Committee had excellent grounds for believing that satisfactory results would be obtained by primary vaccination in infancy, with revaccination on entering and leaving school. The infantile vaccination is undoubtedly of paramount importance. When carried out by the modified method its immediate effects are negligible, whereas all the evidence goes to show that if vaccination is postponed till the school age or later its dangers are definitely increased. The local reaction is greater and it is noteworthy that an overwhelming proportion of recorded cases of post-vaccinal encephalitis have occurred after infancy.

Another important recommendation of the Rolleston Committee was that experiments should be made to determine if it is feasible to reduce the potency of the lymph without impairing its efficacy. We now realise that vaccinia is not only a local disease; the virus is disseminated throughout the body, and the question of the dose inserted obviously requires close study. It is probable that the lymph now in use is considerably stronger than necessary, and possibly the occasional serious sequelæ of vaccination would disappear altogether were a weaker lymph employed. Repeated but less energetic application of a more dilute lymph is likely to be the method of vaccination in the future. It offers adequate protection while at the same time it minimises risk. Vaccination can never be popularised while accidents are common enough to cause complaint in medical circles. Without doubt the public should be widely instructed in the necessity for adopting universal prophylaxis against small-pox, but at the same time we must ensure that vaccination itself is robbed of its terrors.

THE REPORTS OF MEDICAL REFEREES.

It has been often remarked that a disproportionate amount of workmen's compensation law is made or declared in cases which originate in Scotland. An instance is furnished by the recent decision in the House of Lords in the case of Burrows *v.* Wilsons and Clyde Coal Company, in relation to the reports of medical referees. The judgment of the Lords firmly upholds the finality status of these reports, and at the same time the decision contains useful hints for doctors who may be called upon to act as referees.

In the case referred to the moving parties were the employers, and their object was to have the compensation ended by a declaration that the man had made a complete recovery. Their efforts were made on three separate occasions with substantial intervals of time, suggesting that the referee was proceeding in a strictly judicial spirit and was exercising a severely impartial judgment, as indeed might fairly have been assumed. At the first and the second attempts the employers failed, but after the third examination the medical referee reported that in his opinion the workman had completely recovered from the accident, and that his condition was such that he was fit for his ordinary work. Now the Act says that the report shall be conclusive—things must have an ending, and a county court judge is not qualified, nor probably has he the time, to sit in order to review the technical opinion of a medical expert, and to uphold or reject it on the balance, in his mind, of medical evidence from both sides. And anyhow such procedure might seem to justify appeals to higher courts on purely medical issues, which in most cases would be regrettable. But what happened was that the workman tabled in the county court at Hamilton a specific allegation of later symptoms, said not to be observable on such an examination as had been made by the medical referee, and which, it was alleged, pointed to a distinct risk of the disease recurring from the effects of the same accident. The workman did not, indeed, ask the county court judge to hear evidence on the subject, but he did present alternative suggestions. These were that either the report should be sent back to the referee for reconsideration, or that the order to be made should be one only suspending payment of compensation. The employers, on the other hand, stood upon the finality quality of the existing report, and claimed an order ending compensation. The county court judge took the employers' view and ended compensation. Then the workman appealed to the High Court in Scotland, and that court practically took the workman's view. The President of the court regretted that the man had not moved the county court judge himself to inquire into the allegations of risk of recurrence, and the court decided to send the case back to the county court judge for that purpose. No such step has ever before been taken, and in view of its general importance the employers took the case to the House of Lords. The result has been to restore the county court decision and to declare compensation ended. Lord Dunedin censured the step proposed to be taken by the High Court in Scotland as a grave disturbance of the administration code of workmen's compensation. Of that code two essential features are that a medical referee is final on medical facts, and the county court judge, as arbitrator, is final on all other facts.

No doubt it is a matter of temperament whether a medical man will or will not welcome the view that from his report as medical referee there can be no appeal, and that no cavilling at or contradiction of the report is even to be listened to. This latest decision in the Lords makes clear that, when the Act says that the report is conclusive, it means exactly what it says. This decision, then, conveys a lesson not to be forgotten. The quality of finality attaches only to an unambiguous report. This matter has been previously dealt with in these columns at length (vide The Lancet, 1929, i., 402), the occasion being the observation of Lord Sands in a judgment delivered in the Scottish Court of Appeal in a case similar somewhat to that under discussion. The report of the referee is no place for recording the considerations, reservations, and pros or cons on which the medical opinion has been arrived at. The problem may be difficult but an unambiguous solution must be put forward. A new feature was introduced by Lord Dunedin's speech. Before this case we should have said that the report must be unqualified, and as a general matter we say that still. But it is clearly contemplated that it is permissible for, and may be the duty of, a medical referee to report a complete recovery combined with—or ought we to say qualified by?—a risk of recurrence of the disease or of the effects of the injury. Is this another case where lawyers and doctors see things differently? A medical man would probably say that either there is complete recovery or there is not, and that if the industrial disease or the accident has left effects or seeds which may produce a recurrence

of the condition, then there is not complete recovery. What appears to be really in view is whether the workman is again fit for the full exercise of his former trade functions. There will probably be agreement that that stage might be reached, and yet a medical man might see the prospect of a recurrence of the injured condition. Lord DUNEDIN clearly holds that a report of complete recovery with that qualification is a competent form of report, and that the consequence (with which, however, the medical man has no concern) is that compensation will be suspended and not ended. In this way this latest case may open a new chapter of difficulties. Obviously, a mere surmise or general suspicion that the existing state of matters may issue in recurrence will not be a proper exercise of responsibility. The attitude must be much more definite than that. Yet the medical referee is neither bound nor entitled to seek relief by stating detailed medical data, thus in effect throwing on the county court judge the responsibility of decision. Further, there might be a class of case in which, while the man is able to work as hard as ever, the fact of his doing so will bring into operation or accentuate the factors tending to recurrence. In such a case could it be reported that there was complete recovery at all? This class we have imagined, but it assuredly exists and introduces issues of real importance. If complete recovery be reported, with a rider added upon risk of recurrence, the best that the man can hope for is that compensation will be suspended; that is to say, he will in the meantime, and until recurrence, receive no more compensation. Whereas, if the true view is that in such a case it is not proper to report any form of complete recovery, then the man will continue to draw compensation, full or partial, as the case may be.

THE CORRELATION OF CANCER STATISTICS.

THE radiological treatment of cancer has been accorded greater publicity than any other modern therapeutic method. The community has been invited to subscribe—and has subscribed—immense sums for the purchase of radium and for research into the application of radiological methods to cancer. The lay press has assured its readers that this line of work offers the most promising hope of a successful attack on the most dreaded disease. Experts have adduced satisfactory results in different clinics all over the world, and have shown that these results in certain regions of the body compare favourably with those obtained by surgeons. An effort is now being made on international lines to exploit this new weapon to the full and to prevent its abuse. The Cancer Commission of the League of Nations, realising the world-wide significance of the development in radiotherapy, appointed a subcommission to gather and collate information on methods and results. Unfortunately for this purpose the practice of radium therapy—the quantity of radium salt used, the shape of the applicators, the method of application, and the period during which the exposure is allowed—varies in different clinics, quite independently of the adjustment necessary to adapt general rules to a particular lesion in a particular patient.

The region of the human body first selected for investigation was naturally the genital tract of women, since the results after a period of years from all clinics are impressive. The subcommission entrusted to an executive committee, consisting of Dr. J. HEYMAN of Stockholm, Dr. A. LACASSAGNE of Paris, and Prof. F. VOLTZ of Munich, the task of collecting detailed case records from the three large clinics with which they are respectively connected, in the hope that these might be correlated. The report of the subcommission, which has just been published, forms a document[1] of great interest. Its most outstanding feature is, paradoxically, its failure to achieve its object. The subcommission had intended, from a study of results combined from these three centres, to draw up statistical data which would form a guide to radio-therapeutic treatment. Dr. JANET LANE-CLAYPON spent much time and labour on an attempt to produce this analysis, but was forced to the conclusion that the methods employed in the three clinics and the classifications of stage of disease differed in such essential particulars, and that the data of after-history were set out so inconsistently that any attempt to correlate the three sets of figures could only cause misunderstanding. It is not yet possible, in fact, for an unbiased statistician, from the material provided, to express in figures an opinion on the exact value of radium in treatment, or on the best technique for applying it. But it is clear that if radiological methods are to be explored and improved the experience of the big clinics must be available for smaller and younger foundations, and the subcommission have, therefore, taken steps to clarify the position. They have drawn up, with great care, a set of rules for the classification of the different varieties of utero-vaginal cancer, for the grouping of growths into different stages, and for the essential statistical data and the method of calculating results, and have elaborated a scheme for describing the details of technique. They have also designed a standard international case-record with a diagram for marking extent of growth, which has already been adopted by the three clinics at Stockholm, Paris, and Munich, and which will, it is hoped, be adopted by all other institutions using radiological methods. Five years hence, therefore, there should be a body of strictly comparable statistics from all parts of the world. From these it should be possible to decide with reasonable accuracy which methods are giving the most satisfactory results.

Though the achievement of the main object of the subcommission has had to be postponed, the illustrated accounts supplied by the three members of the executive committee, which form the bulk of the report, will certainly encourage those who look to radium and X ray treatment as the hope of the future in gynæcology. The results obtained show a steady improvement year by year. It is, however, obvious that the details of dosage and method of application must be most carefully considered and adjusted if the end-results are to be satisfactory. The increasing use of radium by practitioners who are not fully instructed in its technique offers a serious threat of abuse. The inexperienced doctor may rest content with transitory improvement in cases which he ought to cure, or may apply an inadequate or excessive dose by a method which has been discarded as unsatisfactory. No one who is unable to spare time to attend such practical courses as those offered by St. Bartholomew's or the Westminster Hospitals, or to work for a period at radium clinics, should attempt to treat patients himself. The fact that an international effort to frame, if not a code of rules, at least an indication of preferences, has failed, is not a warrant for daring experimentation by individuals even more ignorant of the physical and physiological forces thus harnessed than are the experts. The danger of the widespread advertisement of radium in the treatment of cancer is undoubtedly its casual adoption in private practice by men who would not try to perform an intricate surgical operation. With the establishment in all countries of convenient treatment centres in connexion with hospitals this danger should cease. It is probable that the study of records compiled on a comparable basis will lead to a standardised technique, but it is unlikely that this will ever be adapted for the use of those without special training.

[1] League of Nations Publications. III: Health. 1929. III., 5. Publications Department, League of Nations, Geneva. (London: Constable and Co.).

Annotations.

"Ne quid nimis."

METROPOLITAN ASYLUMS BOARD.

THE annual report[1] of the Metropolitan Asylums Board, which has just come into our hands, reviews the work of the Board for the year which ended on May 31st last. The Board was established in 1867, to combine the unions and parishes of the metropolis, for the purpose of establishing "asylums" for the reception and relief of the sick, insane and infirm, and the present is the thirty-first report which sets out the discharge of these functions. It will be the last review of a complete twelvemonth report to be issued by the Board, for on April 1st next the whole of its functions will be transferred to the London County Council, and more in sorrow than in anger, the story of this transfer is told (pp. 27–29). The transfer is, of course, only a part of the comprehensive measure for the revision of local government, which received the Royal Assent on March 27th, and it may be surmised that, had "asylums for the sick, insane and infirm" been imbued elsewhere with the spirit and ideals of the Metropolitan Asylums Board, no occasion would have arisen for such drastic change. In a previous report the Board made clear to the Minister of Health the value which it has set upon its work, a value which there will be few to question. Since its inauguration in 1867 the Board has enlisted the services of men and women who have devoted themselves to the work of providing, maintaining, and extending where necessary the public hospitals required by London for infectious diseases and tuberculosis, mental hospitals, ambulance and transport services, a training-ship, and other lesser services. The whole of the debt of nearly £7,000,000, raised to meet capital expenditure on the erection, acquisition, and equipment of these hospitals has been paid off, with the exception of a sum of about £300,000, representing expenditure on grant-aided services of which the Government is responsible for one-half. The Board now has under its control 25,000 hospital beds, and in times of pressure employs a staff of 10,000 persons. Its duties have steadily increased, and only last year Parliament imposed fresh responsibilities in connexion with the Metropolitan Common Poor Fund. It has been especially galling to the group of 73 members—33 elected by metropolitan boards of guardians and 18 nominated by the Ministry of Health—that they are now to be superseded by virtue of a guillotine resolution which provided no opportunity in the House of Commons for the discussion of the provisions of the Bill as they related to London, the whole of these being passed en bloc in a few minutes, so that no reference was possible in the House to the work of the Board. In other years we have taken the opportunity afforded by the annual report to call attention to one or other of the far-reaching avenues of reparative and restorative work for which the Board is responsible. The present report is the largest which has yet been issued, and after the usual summaries — administrative, general, medical— nearly 200 pages are allotted to a series of papers contributed by medical officers of the infectious hospitals, mental hospitals, tuberculosis, sick children, and dental services. To some of these we shall recur. Had the Board always presented its report in a form so attractive and well illustrated as the present, its work would have been even more widely known among the rank and file of the medical profession than it is at present. With one aspect of the work we have kept our readers closely in touch for long past, by recording the weekly bulletin of cases in the infectious hospitals. Many developments may be deduced from a careful study of this list—the increasing hospital care of measles and whooping-cough, the allotment of more than a hundred beds for the study of the results of encephalitis lethargica, the provision of beds for mothers to accompany their infants with ophthalmia neonatorum, the segregation of cases of puerperal fever for concerted study—to name but a few of the directions in which the work of the Board has led the rest of the country in the effective treatment of infectious disease.

[1] From the Office of the Board, Victoria Embankment, London, E.C. 5s.

REPRESENTATIVE MEETING OF THE B.M.A.

Manchester was much impressed, if a little mystified, by the proceedings of the Representative Body of the British Medical Association which concluded four strenuous days' business there last week. The newspapers were astonished to find that delegates working daily from 9.30 A.M. till 6.30 P.M. could easily be reconciled to the prospect of a further evening session, but this, of course, will not surprise those who know their medical profession from the inside. What was far more remarkable was the spirit in which the representatives tackled the programme set before them—a programme making continuous demands on altruism as well as understanding, neither of which was lacking. Dr. E. R. Fothergill had some justification when he described the meeting as epoch-making, for it included far-reaching decisions on the working of voluntary hospitals, the future relations of public and private medical service, and the practice of midwifery. In all these matters the profession has a hard task to keep up with the march of events which are largely beyond its control, but the schemes proposed and approved at Manchester are at the very least a laudable attempt to divert progress into paths which lead in an approved direction. Some idea of their nature and their reception may be gained from the brief report of the meeting which we conclude on another page of this issue.

PELVIC IRRADIATION IN THE PREGNANT WOMAN.

THE use of radium and X rays in gynæcology is increasing every year. It is therefore becoming more and more important to know what effect, if any, irradiation exerts upon the ovary and the embryo, and whether it is likely to prejudice the health of subsequent children. The question is difficult to investigate, for it is almost impossible to assess the numerous other factors capable of causing ill-health or defect in the offspring. Very little is known of the effects of heredity and environment upon the mother and the unborn child, or the extent to which disease in the mother, either local or general, may influence the fœtus. This is particularly important since the pelvis is only irradiated for some kind of pathological condition. All the defects of structure and function that have been observed in the children of irradiated women have also been observed in the children of others, and no condition has so far been recognised as pathognomonic of irradiation. It is nevertheless possible to draw certain general conclusions from a careful study of a series of cases. Dr. Douglas P. Murphy, of the University of Pennsylvania, has recently published an analysis of 320 pregnancies from the literature,[1] and of another 283 of which data were supplied by a number of radiologists and gynæcologists in answer to a questionaire.[2] The 320 cases in the literature included 53 women who had undergone irradiation after conception; 44 of them carried their children to term; 27 of the children presented some disturbance of health or defect in development during the period over which they were observed. Out of 198 full-term pregnancies which followed preconception irradiation, only 10, or 5 per cent. of the children were not

[1] Surgery, Gynecology, and Obstetrics, 1928, xlvii., 201.
[2] Ibid., June, 1929, p. 766.

perfectly healthy when under observation. Although no account is taken of other detrimental factors, it appears, as would have been anticipated, that irradiation is much more likely to prejudice the health of the child if performed after conception than if performed before. The children of the women who were treated after conception presented, on the whole, the more serious lesions.

The material provided by the questionaire was, of course, much more fully documented. It did not appear that irradiation before pregnancy increased the probability of abortion. The abortion rate was 21 per cent. only, compared with the 33 per cent. suggested by various statistics as the rate for the population at large. In the group irradiated during pregnancy the rate was, however, 43·3 per cent. Of the 53 women who were irradiated when pregnant, 23 aborted while 12 of the remainder bore children who were classified as unhealthy according to the definition laid down for the purposes of the investigation. The children suffered from under-weight at birth, microcephaly, hydrocephaly, blindness, Mongolian idiocy and other gross defects of structure and function, mostly involving the central nervous system. Dr. Murphy considers that most of these disturbances may therefore be fairly attributed to the irradiation. His supposition is supported by animal experiments.[3] He regards the damage as due, perhaps, entirely to the direct irradiation of the embryo, and hardly at all to the effect of the rays upon the internal secretion of the ovaries. The unhealthy children born by the 230 women who had received irradiation before conception only numbered 15 per cent. of the total. Many of their disturbances were not serious, and none of the children showed microcephaly; moreover, all the lesions were of kinds which also appear among the children of mothers who have not been irradiated. The infantile mortality-rate was lower among the children in this group under investigation than among the general population. The conclusions which Dr. Murphy suggests are, first, that no pregnant woman should receive pelvic irradiation if the child is to be allowed to go to term, for according to his figures, there is risk that it will suffer from a serious defect; secondly, that, before a woman is irradiated, it should be definitely ascertained that she is not pregnant.

SYNTHETIC PERFUMES.

To throw a perfume on the violet, is, we learn on high poetic authority, to be guilty of ridiculous excess; but we have, it seems, approached that absurdity. In *Science Progress* for July, Mr. H. Stanley Redgrove discusses the present state of synthetic perfumery. The general conclusion we may draw from his article is that nature may be imitated very closely but that in most cases delicate noses will prefer her products to those produced in the laboratory, although these have their uses. Pure substances are rarely found in nature. So far as the organisms which yield perfumes are concerned, their main rôle is not to produce pure chemicals, but to carry on their own life and to continue it in their progeny. The odoriferous substances which they secrete are incidental to this and in most cases the odour which has caused them to be esteemed is due not only to a main product but to others associated with it. In the course of investigations on organic chemistry many odoriferous products have been separated, some identical with, others only smelling like the main constituents of natural perfume. The least attractive example of a substitute perfume is the use, now confined (and even then with danger) to cleansing and polishing preparations, of nitrobenzene for bitter almonds, of which the odoriferous principle is benzaldehyde. A more subtle case of partial identity quoted by Mr. Redgrove is that of jasmine. The natural perfume consists mainly of benzyl acetate, an easily synthesised substance, but not a very satisfactory substitute alone, as otto of jasmine contains also benzyl alcohol, linalol, linalyl acetate, methyl anthranilate, indole, and a ketonic body jasmone. Not all of these substances are pleasant smelling alone and in quantity. Many artificial "musks" have been used, since, in 1888, Baur accidentally discovered one. The best seems to be trinitrobutylmetacresol-methylether, and other nitro bodies are used. Musk itself appears to be a methyl cyclopenta-decanone, containing neither nitro group nor indeed nitrogen in any form. Synthetic vanillin appears satisfactorily to replace the product of the bean. Ionone is used now in most preparations of "violets." The main use of synthetic perfumes seems to be when blended with the more complex products of nature. Possibly a more determined effort in the direction of better culture of perfume yielding plants might enable the natural products to hold their own. While the industry is not exactly of fundamental importance to medicine, there are occasions on which the injunction *cura jucunde* requires perfumes.

[3] Reifferscheid. k. Strahlenth., 1925–26, xxi., 266.

CLINICAL TRAINING AT THE SYDNEY MEDICAL SCHOOL.

THOUGH there is a close association in this country between the medical schools and the hospitals to which they are attached the hospitals were mostly incorporated long before they were used as training places for students, and moreover in very large centres not one but many hospitals are needed to give the clinical facilities required for the education of one year's batch of university students. The election of university professors who are to undertake hospital duties is usually made by a joint committee consisting of representatives of the hospital and of the university, assisted by experts, but the ordinary staff appointments are generally made independently of the university, which is then invited to recognise the person appointed as an official teacher. This custom has not led to friction, though in the early years of a medical school the attempts to impose academic ideas on an institution already staffed have not always met with success. According to our Australian correspondent the conditions in which the students of the Sydney Medical School receive their clinical training are ideal, for not only is the Royal Prince Alfred Hospital, Sydney, one of the most progressive in Australia, but the Act of incorporation provides that the Senate of the University of Sydney controls the conditions under which the medical students receive their training. The result is that all the professors and lecturers of the University medical school are members of the staff of the hospital and all medical appointments to the hospital are made by a conjoint board consisting of the members of the University Senate, together with the directors of the hospital. Much of the present-day efficiency of the hospital is due to the sound foundations laid early in this century by the late Sir Thomas Anderson Stuart, the professor of physiology, and who was Dean of the Faculty of Medicine at the University for nearly 40 years. The board of directors of the hospital consists of ten representatives of the subscribers and governors of the hospital, ten representatives of the Government, and two ex-officio members of the University Senate, including the Chancellor and Dean of the Faculty of Medicine. There is no specific provision for a representative of the medical profession, other than the Dean of the Faculty of Medicine, but the board has always endeavoured to secure the election or appointment of men who represented the branches of the medical profession necessary to the efficient administration of the hospital. Under the by-laws of the hospital the honorary medical staff form a medical board, to which is referred any subject of medical importance for opinion and report. Arrangements are made periodically for the members of the permanent administrative staff of the hospital to visit Great Britain and the United States of America in order to maintain the hospital in accordance with modern

developments. The specialties appear to be particularly well served. The professor of psychiatry (Dr. R. W. Dawson) and his assistants now carry out their work as part of the daily routine of the hospital. The attendance at the venereal diseases clinic, first established in 1917, has latterly become so great that it has been found necessary to limit the number of patients on any particular day. The department of urology was developed as a result of the generosity of Dr. Gordon Craig, who contributed £20,000 towards the establishment of an urological department at the university, while the committee controlling the £140,000 collected for a cancer research institute in connexion with the University of Sydney and the supply of radium made available by the Commonwealth Government has provided facilities for colloidal lead treatment at the hospital and has also installed a deep X ray therapy plant. Every cancer patient is reviewed by a conference of experts, and a decision is made whether operative surgery, radium, or deep X ray therapy or lead will be utilised. Since the establishment of the clinic there has been a marked influx of patients from New South Wales and the adjoining States. The students should also benefit from the establishment of a social service department, since they are apt to neglect during their hospital years those problems of environment and economic condition, the adjustment of which forms such a large part of their duties in private practice.

MAN AS A CARNIVORE.

IT is widely believed by medical men that the consumption of large quantities of meat causes a strain on the cardiovascular and excretory systems which may be at least partly responsible for the production of arterio-sclerosis and nephritis. Moreover, a section of the profession is at the present time engaged in preaching the doctrine that meat is a dangerous form of food for human consumption on account of the risk of auto-intoxication following the absorption of putrefactive products formed from it in the large intestine. Neither of these beliefs or theories rests on any very solid foundation of established evidence, though it is possible that they are of real practical value to the clinician as a guiding principle. Any direct evidence that promises to shed even a gleam of light on the vexed problem of the harmful or beneficial effects of meat diets on mankind will always be welcome. An experiment has been recently carried out in the United States to test, as thoroughly as modern clinical and laboratory investigations will allow it to be done, the effect on man of an exclusive meat diet lasting for one year. The subjects of the experiment were the arctic explorer Stefansson (who had previously lived in the arctic regions for seven years on a similar diet) and his colleague Andersen. The exhaustive metabolic, bacteriological, and chemical investigations carried out during the year have not yet been reported in full, but a brief summary of some of the main results has been published by Dr. C. W. Lieb,[1] who took part in the work. No decrease in physical or mental vigour was observed either subjectively or objectively in either of the men, although sedentary lives were led by both. They endured the hot weather of a New York summer just as well as in former years, and at the end of the test period had a very good colour. Andersen noted that his hair stopped falling out shortly after the meat diet was started. Stefansson maintained a blood pressure of 105 systolic and 70 diastolic throughout the whole period, in spite of the fact that he had lived on an exclusive meat diet for seven years before the present test was begun. Andersen's blood pressure was 140 systolic and 80 diastolic at the beginning of the test, and 120 systolic and 80 diastolic at the end of the year. The average protein intake was not really excessive, amounting to 100 to 140 grammes a day. The bulk of the diet in each case was composed of fat. Most of the meat eaten consisted of boiled or stewed cold storage meat. Stefansson occasionally took eggs when he could not get meat; Andersen took no food but meat the whole time. In spite of the fact that this diet contained but very small amounts of calcium, no evidence was obtained by radiography that there had been any absorption of calcium from the long bones. At no time were there any signs in either subject of disturbance of the renal functions, and chemical analyses of the blood revealed no significant alterations apart from a temporary lipæmia after very large amounts of fat had been eaten. In the case of Andersen, a sugar-tolerance test carried out at the end of the meat-eating period produced a typical diabetic curve. It was noted that the stools of both subjects remained inoffensive, very few putrefactive spore-bearing organisms ever being found. The intestinal flora were in both cases simplified as regards both types and total numbers of bacteria. For the first few days of the test period Stefansson was given nothing but lean meat, and he predicted that he would soon feel ill. After two days he developed nausea and diarrhœa with lethargy and general weakness. The addition to his diet of suitable quantities of fat was followed in two days by complete recovery, and for the remainder of the year no further trouble of the kind occurred. At the end of his test period Andersen had an attack of lobar pneumonia. He made an uninterrupted recovery, and it was noticed that he showed few of the toxic symptoms of other patients in the hospital with the same type II. pneumonia. While the results of these observations are not intended to be regarded as a piece of propaganda in favour of the consumption of large quantities of butcher's meat, they are of very great interest as a demonstration of the apparent harmlessness of a meat diet to healthy white men living in a temperate climate.

[1] Jour. Amer. Med. Assoc., July 6th, p. 20.

A CASE OF GENERALISED BLASTOMYCOSIS.

GENERALISED blastomycosis is not common, and a case from the clinic of Prof. Kerl, in Vienna, recently demonstrated by Dr. E. Urbach, presents unusual features. A patient, aged 30 years, who has been under observation at the clinic for ten months, gave the history that two years ago a swelling appeared on his gums, with ulcers, and that this was followed, after six months, by swellings on the thigh, the abdomen, the neck, and face. Surgical treatment was tried, as well as X rays applied to the gums. When the patient was seen first by Dr. Urbach, a thin, purulent secretion was oozing from the lanced tumours on the neck, thigh, and abdomen. Syphilis was excluded, and all examinations of the blood, sputum, and cerebro-spinal fluid gave negative results. A mycotic disease was suspected, and microscopic examination showed the presence of a yeast in pure culture in all secretions; the yeast was found also in sections of the swellings included in giant cells. The patient gave a distinct allergic reaction on intracutaneous injection of blastomycin, and the organism was lethal to experimental animals (mice and rats). The patient suffered from chronic bronchitis. Yeast fungi were found in the sputum and cultivated, both from the urine and from the cerebro-spinal fluid. Treatment of the generalised infection with autogenous vaccine, with X rays, with intravenous injections of iodine, in large doses, had some temporary effect, but the patient soon relapsed. Recently he has had a high temperature, with rapid extension of the disease in the mucous membranes. The meninges are now affected, and the prognosis is regarded as bad. The newly instituted laboratory for mycotic diseases, attached to the Vienna dermatological clinic, has lately been able to establish the mycotic origin of many rare affections of the skin, and of certain cases of chronic bronchitis and bronchiectasis. It is possible that the yeasts are responsible when "oidium albicans" is frequent in the mouth, the œsophagus can easily be affected. Hitherto, blastomycosis has not often been reported in Austria, but now we must be on the lookout for it.

THE CLINICAL SIGNIFICANCE OF LACTIC ACID.

RECENT research into the metabolism of carbohydrates in the human body has led clinicians to study more closely the products of this metabolism in many pathological conditions. The brilliant work of A. V. Hill and others has shown that lactic acid is an important product of normal muscular activity, being formed in the process of contraction without the intervention of oxygen. It is only in the phase of recovery after contraction that a portion of this lactic acid is in fact oxidised, whereby sufficient energy is liberated to enable re-synthesis of approximately four-fifths of that originally formed into some complex precursor body. Prof. J. J. Macleod in his exhaustive account of the physiology of glycogen, lately published in our columns,[1] could not identify such an unknown percursor with either the glycogen of muscle or its free sugar. His experiments showed that it was only when oxygen supplies failed to keep pace with demands that any significant lowering of muscle glycogen occurred, and that lactic acid continued to accumulate in muscle after death, even after all the glycogen present had disappeared. It is therefore probable that some substance is formed between glycogen and lactic acid, though the nature of such an intermediary body is at present unknown. Whatever may be the exact part played by lactic acid in muscular activity, its non-removal places the body in a condition of so-called oxygen-debt, whereby it is ensured that the over-production may be gradually compensated for by an increased oxygen-intake after the acute period of excessive formation has ended. Extreme and violent periods of exercise may thus lead to an enormous accumulation of lactic acid in the muscles and blood; on the other hand even slight exertion may similarly lead to accumulation, if the processes of oxidation and removal are themselves deficient. Increase in lactic acid may thus result from over-production or from non-removal, or from a combination of both.

The normal quantity of lactic acid in the blood is reported by various workers to lie between 9 and 30 mg. per 100 c.cm. of blood, being subject to relatively wide variations and greatly increased by muscular exercise. Its subsequent fall is effected both by the prolonged increased oxygen absorption after the exertion, when the oxygen-debt is made good, and by its excretion unaltered via the kidneys and skin. Analysis of the urine and of the jerseys worn by the players after a violent game of football have shown the relatively enormous quantities of this acid that may be excreted through these channels. In some pathological conditions it is probable that a defect in one or all of these mechanisms is at fault. In hyperthyroidism, for example, a relatively small amount of physical effort is sufficient to lead to an abnormally large oxygen-debt, and Zondek has shown that the oxygen dissociation curve of the blood in this condition resembles that found during muscular work in normal individuals; it is suggested that many cases of Graves's disease are in fact the result of abnormal metabolism in the muscles, to which the thyroid hypersecretion is secondary and compensatory. In cardiac failure the highly acid urine may contain large amounts of lactic acid, and the return to alkalinity under treatment offers a valuable and important guide to prognosis; in this case the defect is both one of impaired oxidation resulting from the limited pulmonary ventilation with partial asphyxia, and one of lessened excretion by the kidneys and skin. A maximum efficiency of lungs and circulation is associated with rapid disappearance of lactic acid from the muscles, and what is known as training is probably at least in part a process of increasing this rate of removal. It is suggested that the stiffness and cramp so frequent in the unfit after bodily activity is a result of such non-removal. Bergmann and Dresel[2] have brought evidence to show that an excess of lactic acid is a cause of the muscular exhaustion occurring in myasthenia gravis, and Arai[3] in a review of intermediary metabolism quotes the increase found after injection of adrenalin or administration of thyroid extracts. Further investigation into the relationship of lactic acid to pathological states of exhaustion will no doubt continue to throw light upon these fascinating and difficult problems.

There are, however, other significant facts in connexion with this subject. Warburg has shown the importance of lactic acid in the growth of malignant tumours, and the presence of this substance in the cancerous stomach is well known. Craven Moore and Roberts[4] have gone so far as to state that its presence in a test-meal is pathognomonic of gastric carcinoma, and according to others a part at least of this acid is produced directly by the tumour; there is, it seems, an increase in blood lactic acid in patients suffering from carcinoma whenever this is associated with metastases in the liver, and it is conceivable that traces may be excreted into the stomach though there may be no growth actually in this organ itself. It is certain that disordered hepatic function may lead to high lactic acid values in the blood, and the change in the blood after a dose of this substance has been used as a test of liver efficiency. In diabetes a marked rise of blood lactic acid occurs after the ingestion of sugar, which can be immediately reduced by the injection of insulin. Tanaka[5] and others have shown a similar occurrence in experimental lack of vitamin B, and also in beri-beri in man. Arai makes the interesting suggestion that the peripheral neuritis occurring in both may be due to an intoxication by some product of pathological metabolism. It is a suggestion that deserves further consideration.

[1] THE LANCET, July 6th, p. 1; July 13th, p. 55; and July 20th, p. 107.

[2] Bergmann, G., and Dresel, K.: Zeit. f. Klin. Med., 1928, cviii., 120.

[3] Arai, M.: Le métabolisme intermédiaire en médecine, Verhandl. d. Jap. Gesellsch. f. inn. Med., 1928, xxv., 21.

[4] Moore, Craven, and Roberts, W. M.: Quart. Jour. Med., 1928, xxii. (Proc. Ass. Phys.).

[5] Tanaka, K.: Centralbl. f. die ges. inn. Med., 1928, liii., 345.

THE STORAGE OF X RAY FILMS.

THE disaster at the Cleveland (Ohio) Clinic continues to have its repercussion in all countries where celluloid film is extensively used in medical practice. Sympathy has gone out to Dr. G. W. Crile for the unkind irony of fate which singled out a man who has done so much to relieve the suffering of humanity and who has contributed so much to the safety and comfort of patients in hospitals. Particularly distressing for him has been the widespread impression that the disaster occurred in a hospital when, as a matter of fact, it happened in a building specially contructed for diagnostic and laboratory work. Such a separated clinic building was a further attempt to protect the hospital patient confined to bed. We learn from the *Bulletin* of the Cleveland Academy of Medicine, which has analysed the pathological findings, that some of the earlier deaths were due to carbon monoxide poisoning, while other more delayed reactions resulted from nitrogen dioxide. The reaction for cyanides was questionable. In a report made by the State Department of Industrial Relations to the Governor of Ohio, the immediate cause of the disaster is described as follows:—

1. X ray films in basement storage room decomposed slowly in their cabinets because of the heat from either a leaky steam pipe in the room, or from electric light bulbs hanging on ordinary cotton insulated wires.

2. Gases generated by the decomposition seeped into the room and thence into a pipe tunnel which circles the basement and thence into pipe chases which led to all parts of the building.

3. The first explosion occurred near a switch-board in the basement when the circulating gases came in contact with cold air entering the basement through an open window.

4. The second explosion probably occurred in the walls

and pipe chases and the third explosion probably occurred between the ceiling of the fourth floor and the roof.

The investigators appointed by the U.S. Army Chemical Warfare Service have now issued their own report on the causes of the disaster. A special chamber was constructed in order that experiments might be made as nearly as possible under the same conditions as obtained in Cleveland, several tons of film being employed. It was found that ignition could be provoked without the presence of a flame by such agents as hot steam piping or an electric light bulb. Mere storage of film in an overheated room gave rise to evolution of toxic gases. While combustion in a free supply of air does not result in any large quantity of poisonous gas, in a limited supply of air, and when combustion is brought on gradually, large quantities of carbon monoxide and nitrous oxide along with higher oxides of nitrogen are produced. Chemical extinguishers were found of no avail, but large quantities of water were effective if applied in good time. The comparative safety of film made with a basis of cellulose acetate was confirmed by the American investigators. Their report concludes with the statement that a storage vault 7 by 8 by 8 ft. with a 16-in. square vent in the rear wall just below the roof, held close by a 155° F. fusible link, affords reasonably safe storage for a ton and a half of film.

Two recent brochures (Nos. 74 and 76) of "Occupation and Health," issued by the International Labour Bureau in Geneva, give in concise form some of the salient facts in the combustibility of cellulose. The decomposition of the nitro-cellulose which it contains continues, once it has been started, even in the absence of air, because its complex molecule contains sufficient oxygen to combine with the hydrogen and carbon present. In the case of detonation innocuous gases, such as nitrogen, steam, and carbon dioxide, are formed. But when the material burns in a confined space the decomposition is less complete, so that nitrous fumes, carbon monoxide, and possibly hydrocyanic acid, are given off. Once alight celluloid burns rapidly, with leaping jets of flame, attaining a temperature of 1500° to 1700° C. Unstable qualities of celluloid may decompose at about 100° C. and may even take fire with an explosion, a phenomenon which for good qualities only occurs at 150° to 170° C.; but decomposition may continue without flame, even after apparent extinction of the fire, with the generation of explosive gases which may reach distant situations and cause a fresh outbreak. Conflagrations of celluloid, or its less active decomposition without flame, cannot be damped down by ordinary methods of excluding air, by immersion in carbon dioxide or in steam, since all the elements needed for combustion are present in the material itself. One gramme of nitrocellulose film is said to set free 260 c.cm. of carbon monoxide, 150 c.cm. of oxides of nitrogen, and 5 c.cm. of hydrocyanic acid, as well as traces of acrolein and camphor. Hence a fire caused by it can only be fought by men wearing gas masks, while those who are rescued must be looked upon as possible cases of gassing, particularly by nitrous fumes, the symptoms of which, although they do not become manifest for some time, may cause death within 24 hours.

As a result of the Cleveland disaster, the Public Health Council of New York State has prohibited, after September 1st, next, the sale or distribution of cellulose-nitrate film for X ray purposes, and it is understood that New York City will take similar action. The State of Ohio has issued an elaborate set of recommendations designed to achieve the same end. Cellulose-acetate films are "strongly recommended" in place of the inflammable variety, and where the latter are in use, or in storage, it is suggested that a print should be taken for record purposes and the film destroyed. In the meantime, our own Protection Committee, as it is called, has suggested certain common-sense precautions, such as the desirability of storing X ray films in special cabinets or cupboards and so limiting the number which are lying open during reference, and especially the need for a film store, isolated and cool, in the case of institutions where large numbers of films accumulate. It was stated at the recent annual meeting of the Institution of Fire Engineers in Manchester, that certain hospitals might have on their hands as much as three or four tons of film without conforming strictly to the requirements of the celluloid regulations. It was stated at this meeting that insurance companies were conferring with hospital authorities in the matter of storage. No doubt practice varies at present, but we have been given details of one large X ray department recently built in which the films, as they are returned from the wards, are filed in steel boxes which are themselves kept in a large fire-proof crypt in the basement. Such a crypt, which is remote from steam pipes and electric wiring, may be as safe as the concrete outbuilding which would be ideal where space made it practicable. We learn from various sources that the non-flam or cellulose-acetate film has not only the drawback of expense—a serious matter when radiographic films are so large—but also that it is apt to have a yellowish tinge and to be less translucent than the nitrated film. The Protection Committee indicates the undesirability of permitting smoking or naked lights in the proximity of a film store, but it is perhaps fair to repeat that X ray film is not ignited by chance contact with a glowing cigarette end. Any general rule against smoking in an X ray department would be disregarded as an indication of childish panic rather than of considered judgment.

AUTOHÆMOTHERAPY IN SYPHILIS.

A REMARKABLE case of resistant syphilis, with an intractable Wassermann reaction, has lately been described by Beume,[1] of Hanover. The patient, who presented himself for the first time in November, 1926, with a typical chancre and a negative W.R., had two courses of treatment, each consisting of ten injections of neosalvarsan (0·45 g.), and 15 injections of bismogenol, concurrently. His third course, in May, 1928, was begun too late, and was frequently interrupted, so that his W.R., hitherto negative, became strongly positive at the end of it. His fourth course included a series of mercury inunctions and ten injections of neosalvarsan. The fifth course began in December, 1928, and entirely failed to influence the progress of a tertiary cutaneous manifestation at the scalp margin. Just after the eighth salvarsan (and twelfth bismogenol) injection, the patient had a riding accident, and was brought to hospital with a hæmatoma of the knee and ankle-joints. During his four weeks' detention there was mild fever. He said nothing to the hospital authorities about his luetic infection, but on discharge on March 12th of this year presented himself at Beume's clinic, where it was found that the cutaneous lesions had dissappeared, and the W.R. had become completely negative. Beume remarks that the pyrexia, as well as the hæmorrhage, may have influenced the sequel, and raises the interesting question whether the proteins set free in the serum, or the fact of their having been previously salvarsanised, was the more important factor in bringing about a cure. He maintains that the proposal, which he has previously made, to treat Wassermann-fast cases by a combination of salvarsan, bismuth and autohæmotherapy, receives further support from this case.

[1]Derm. Woch., June 6th, p. 812.

SALARIES OF HEALTH OFFICERS IN U.S.A.—The New York State Department of Health states that with the increased number of full-time health officers, there is awakening a more general disposition to remunerate more fairly all health officers for their services. In a comparison recently made of cities of 100,000 population or over as to the salaries paid health officers in 1923 with the salaries paid in 1927, it was found that the average salary increased from $5000 to $6200; in cities of 50,000 to 100,000 population it increased on an average from $3404 to $4570.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XXXVIII.

INTERPRETATION OF THE SCHICK TEST.

THE Schick test has now become a well-established clinical aid to diagnosis; it is, therefore, important to have a clear idea of what we ask it to tell us under any given circumstances and to what extent we can rely upon the answer.

The test consists in the intradermal inoculation of a minute amount of diphtheria toxin accurately measured; in susceptible persons a characteristic red circular swelling appears. In such persons the injection of antitoxin will produce immediately passive immunity which will last about three weeks, whereas by giving prophylactically toxin rendered non-poisonous by the action of chemical and physical agents—i.e., "toxoid," with or without the addition of antitoxin, in three doses a week or more apart, active immunity of indefinite duration can be produced.

Technique of Test and Reading of Results.

The technique is simple; the prescribed dose of toxin—with English products, 0·2 c.cm., with American and continental mostly 0·1 c.cm.—is injected intradermally. It is advisable to use the special sharp rustless steel needles, much smaller than the ordinary hypodermic size, sold for the purpose; the plunger of the syringe must fit so tightly that liquid cannot readily be forced past it by any finger pressure. If the needle be held nearly parallel to the skin it is easy to inject intradermally and produce the desired small circular swelling. Even if the operator feels that he has gone too deeply, the proper reaction will probably be obtained, but it is easy to repeat the injection an inch away in the forearm. It is wise always to assign the same forearm—preferably the left—as the one for the toxin injection, and the other for the control fluid. Clear descriptions of the various reactions to be looked for are usually supplied with the various products on the market.

The *negative* reaction, when there is no local red reaction on either arm, and the *negative-and-pseudo*, with equal reactions on the two arms usually fading in a few days, indicate that the patient has a high degree of immunity against diphtheria; he is considered as "immune" against the disease.

The *positive* reaction shows a red flush from half an inch to two inches wide. This usually appears within 24 hours, but may be delayed until the second day and in unusual instances to even the third or fourth day. It is wise to make a final reading on the seventh day. The redness gradually disappears, a fine scaling may occur, and the resultant brown stain fades slowly during the next few weeks. (It is well to offer women patients the option of being tested just above the knee, for a circular brown stain on the forearm, which in patients with sensitive skins may last for some weeks, may be resented.) The right arm into which the control fluid is injected may show a red reaction, while the left arm shows a much larger and probably more intense reaction. This *positive-and-pseudo*, and the simple positive reactions indicate that the patients have either minimal or no immunity against the disease; they are "susceptible."

Clinical Use of the Test.

We may use the test (*a*) in considering whether a given patient has diphtheria, (*b*) we may ask is a given subject immune when we are attempting to control an epidemic, or (*c*) when merely seeking the susceptibles in a non-epidemic period in order to immunise them.

(*a*) If we Schick-test patients with sore-throat, we must consider the result first in its relation to treatment, secondly as a help in administration. It is true that practically every patient admitted to an isolation hospital suffering from diphtheria is Schick-positive (unless, of course, antitoxin has already been given). But for the average patient treatment should not await the application of, or result of, the Schick test. All experienced authors agree that the practitioner responsible for treating a patient complaining of a sore-throat, with some membrane present, which he thinks is probably due to diphtheria, must give antitoxin at once without awaiting the results of swab or of Schick test. The records of every large isolation hospital show that deaths and instances of prolonged convalescence with paralysis or cardiac weakness occur due to failure to give antitoxin when the patient is first seen and the suspicion of diphtheria first arises in the practitioner's mind. From the *administrative* point of view, on the other hand, the test may give great help. The injection of the Schick dose of toxin will give a correct reading even if antitoxin be given four or more hours later. In some hospitals all patients with a "mild" attack are Schick-tested and either given antitoxin four or five hours later—or the physician, guided by long experience of diphtheria, may decide that the patient requires no antitoxin. But this is not a decision for which the wise general practitioner, who has not the patient under observation from hour to hour, will ever wish to take responsibility. If a patient suspected to be suffering from diphtheria gives a negative response to the Schick test, it is very unlikely that the disease is diphtheria. To most useful medical rules there are exceptions. Rare instances are recorded in which "mild diphtheria" has been seen in patients known to be negative to the Schick test—e.g., sore-throat with a slight amount of membrane, temperature probably never reaching 100° F. and a very slight disturbance of health, with absence of complications during convalescence.

To sum up, the Schick test used with discretion may aid in treatment, but it cannot always give us decisive information that will relieve us of the duty of giving antitoxin where diphtheria is suspected; it may be of great service in deciding whether the case should be treated from the public health point of view as one of diphtheria.

(*b*) When attempting to control an epidemic in a school or institution, the test will aid us much. The method has been often described. The whole population is Schick-tested and divided into positive and negative groups. In the latter no diphtheria will occur; only amongst the positive reactors will cases appear. The two groups are swabbed in the search for "virulent carriers" amongst the negative reactors, and to detect, in the stage of incubation, any diphtheria amongst the positive reactors. (If the outbreak be a violent one, it can be stopped entirely by giving antitoxin at once to the positive reactors. Some three weeks later active immunisation may be begun.) Where possible, however, it is better to employ active rather than passive immunisation.

(*c*) When we begin to immunise a group of people as a prophylactic measure, the test is the basis of the whole procedure. With the knowledge and experience gained during the past decade by testing on the large scale, we can say whether, as a compromise, it is permissible to immunise without testing. Since most children of early school age are positive to the test, the tendency of public health authorities is to immunise all children up to the age of 6 or even 10, without preliminary Schick-testing. Some public health authorities do not test as a routine after immunisation. This saves time and money, the obvious disadvantage being that cases of diphtheria may occur amongst the inevitable small residuum of children who do not become Schick-negative

after one course of any of the diphtheria prophylactics available, and this may discredit the whole procedure.

Reservations.

Error may conceivably arise from faulty technique, readings, or the conclusions drawn. Reliable "buffered" diluted toxin of sufficient stability is now available and the technique of the test is simple. The reading of the reaction can be made in the great majority of instances readily and with confidence. A pale red coloration 5 mm. in diameter is clearly a negative reaction, a violent red one of 20 to 30 mm. clearly positive. A small number of reactions may make one pause; pale reactions from about 5 to 10 mm. in diameter are difficult to read as either positive or negative; the reading on the seventh day, however, will clear up most difficulties. The wise practitioner will not in such instances waste time. He will leave the conclusion to any expert available or will make whatever decision will be least dangerous to the individual tested. If the symptoms of the patient suggest diphtheria, but the Schick test is returned as "negative," the doctor will be well advised to conclude that a mistake has been made in the test and to be guided by his clinical observation; he will, therefore, give antitoxin. If the reaction be a "doubtful" one, he will conclude that it is really positive and will give antitoxin. In testing with a view to immunisation, or retesting after immunisation, he will give prophylactic treatment to all with "doubtful" reactions.

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The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lts. (D) to be Surg. Lt.-Comdrs. (D): R. M. Finlayson, C. G. Cruickshank, T. Hunt, L. B. Osborne, R. J. Mc. A. Andrews, A. W. Wallace, L. M. Hughes, and C. J. Finnigan.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Capts. to be Majs.: J. C. Collins (prov.), and remains secd.; W. I. FitzG. Powell, and remains secd. G. W. B. Shaw.

Lt. (on prob.) N. J. Nicholson resigns his commn.

ARMY RESERVE OF OFFICERS.

Lt.-Col. C. A. J. A. Balck Foote having attained the age limit of liability to recall ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Col. J. S. Riddell (late R.A.M.C., T.F., ret.) to be Hon. Col. R.A.M.C. units, 51st (Highland) Div., T.A.

Lt. J. Cook to be Capt.

Supernumerary for service with O.T.C.: A. J. Parer to be Lt., supern. for serv. with Med. Unit, Univ. of Lond. Contgt., Sen. Div., O.T.C.

INDIAN MEDICAL SERVICE.

Col. J. W. D. Megaw to be Maj.-Gen.

Lt.-Col. H. M. Mackenize to be Col.

Maj. G. R. Lynn to be Lt.-Col.

Capts. G. M. Moffat, L. G. Pearson, and Pirojsha Merwanji Antia to be Majs.

DEATHS IN THE SERVICES.

Surg.-Commander Devonshire Penrose Hawkes Pearson, R.N., who died on July 22nd, entered the Navy as a surgeon in 1913, and was appointed to the cruiser *Antrim*. He served in the Grand Fleet during the early part of the War. In 1916 he was nominated for special duty in the Mediterranean, and in 1918 became P.M.O. of the new cruiser *Danæ*, with the acting rank of surgeon lieut.-commander. He was confirmed in this rank in 1919, and was promoted to surg.-commander in 1925. He retired from the service last year.

Special Articles.

MODERN HOSPITALS IN SWEDEN AND DENMARK.

BY H. S. SOUTTAR, F.R.C.S. ENG.,
SURGEON TO THE LONDON HOSPITAL.

IT is probable that the next few years will see a general reconstruction both of our hospital system and of our hospitals themselves, more especially in the provision of a hospital service for private patients of every class. I therefore welcomed the request of my colleagues on the staff of the London Clinic and Nursing Home, a large private hospital which is at present being erected in London, to visit the clinics of Sweden and Denmark and to gather such information as might be of use to us in equipping this new hospital on the most modern lines. Our party was formed of the managing director, the architect, the domestic bursar, and myself, so that we were in a position to criticise and appreciate all we saw from every point of view.

Nothing could have exceeded the kindness with which we were everywhere received, and every possible facility was placed at our disposal. In the course of ten days we travelled nearly 3000 miles and went over 17 hospitals from the cellars to the attics. We were very greatly impressed by all that we saw and by the immense strides made in medical service throughout Scandinavia. It has become a national service in the best sense of the term, supported by the resources of the State, organised and controlled by a progressive medical profession, and quite obviously used and welcomed by the public, both as a privilege and as a right.

The position of these hospitals must be understood if their significance is to be appreciated. The organisation differs greatly from that familiar to us. Sweden is divided into a number of administrative counties and each of these is responsible for the care of its own sick. In a central town a large hospital which serves the whole county is erected and maintained by the county authorities, who have a considerable measure of autonomy. In only a few large towns, such as Stockholm itself, are these special hospitals maintained by the municipal authorities, and here also are a few independent endowed institutions, such as the Diakoniss Hospital in Stockholm.

Payment According to Accommodation.

In every one of these hospitals, even in those which correspond to our poor-law infirmaries, the patient has to pay according to accommodation. It is true that with the working class these payments are met from insurance societies, membership of which is universal, whilst the charges themselves are exceedingly moderate, varying from 3*s.* to 21*s.* a day with the accommodation. It is, however, a perfectly definite payment for services rendered, and although it is backed by the State, or in a few cases by endowment, there is quite obviously no question of charity in the transaction.

As to the accommodation provided, it is everywhere of a very high order. There is a general tendency towards the abolition of large wards and the limitation of the beds to six or eight at the most. The majority of the beds are in rooms taking one, two, or three patients, and as a result the patients have a degree of privacy impossible on the older system. This might at first appear to involve additional work for the nursing staff, but the arrangements are so convenient that this does not result. In every hospital ample provision is made for private patients, but the accommodation differs only in small refinements from that in the rest of the hospital, for, indeed, the latter can hardly be improved upon.

A Medical Director.

In all the public hospitals visited by us the professional work is under the control of a medical director, who mostly has a large degree of executive control, and a number of assistants working entirely under his authority. The system is the usual one maintaining on the Continent and differs fundamentally from that customary in this country. It cannot be denied that it leads to a degree of coördination which must be of advantage both in the progress of medical science and in the treatment of the individual. It necessarily involves, however, the concentration of all the more important work in the hands of a few individuals, and the effect of this is accentuated by the fact that practically the whole surgical work of the country, both public and private, is carried out in the hospitals. It is true that in Stockholm and Gothenburg there are large private hospitals, open to all practitioners, but, in general, surgical practice is only carried on within the walls and by the staff of the local hospital.

Spacious Buildings.

The buildings themselves give an impression of spaciousness and of coherent design which is very impressive. The Academic Hospital, at Upsala, with accommodation for 577 patients, is situated in grounds 25 acres in extent, yet the buildings are so arranged that access from one to another is easy. Even in the great County Hospital of Copenhagen, which is designed for an ultimate capacity of 1000, contact between the various departments and sections of the hospital is easily maintained by large underground tunnels. Spaciousness and accessibility have been combined with extraordinary skill.

The feeling of space is maintained by the large airy corridors upon which all the modern hospitals are based. With the use of separate rooms for the patients the pavilion system, in the ordinary form, ceased to have any advantage, so that some modification of the corridor plan is universal. The corridors have been kept clear of every encumbrance, even the doors lying flush in their walls, and to look down one of these long corridors, silent and empty, to a window in the far distance is impressive. Silence indeed is one of the most remarkable features of these hospitals, for the floors are covered with rubber or cork, the doors are hollow and packed with wool, and there are no bells. Every now and then a light appears in a little bulb over one of the doors, to indicate that a patient requires the nurse, and its silent call adds still further to the impression of quiet.

The Patients' Rooms.

The patients' rooms are of adequate size, much larger than those in many of our nursing homes, and the fittings are simple and well designed. The fact that box-spring mattresses are almost universal shows the standard of comfort supplied. Central heating is everywhere in use, and the double windows, necessitated by a Scandinavian winter, are so arranged as to allow of full ventilation without a draught. The excellence of the ventilation of all the hospitals we visited was a surprise to those of us who are familiar with Continental custom. In the private rooms hot and cold water is always laid on, and in the private Red Cross Hospital in Stockholm each room has its own lavatory attached.

The Baths.

As one would expect in Sweden and Denmark, the bath departments are constructed on a magnificent scale, and one would have to go to Bath or to Buxton to find their rival in this country. Every conceivable form of bath is supplied, and all are in constant use. It appears that rheumatism is a serious problem, and almost every hospital has a separate rheumatic section, specially supported by the State. It takes the form of a boarding-house to which patients can be sent from any part of the county served by the hospital and where they can live comfortably at very low rates, usually met by insurance, during their treatment. The whole organisation seems admirable, and it might well be adopted in this country.

X Ray Equipment: Operating Theatres.

The X ray equipment was everywhere of the highest order and few hospitals in this country could approach what appears to be an almost standard installation. The diagnostic and therapeutic departments are in every hospital entirely distinct, with entirely separate generators and equipment. The diagnostic department is generally equipped with the convenient apparatus designed by Prof. G. Forssell, and the generators have usually a capacity of 120,000 volts. In the newer hospitals Stabilivolt generators by Siemens and Halske are installed, with a capacity of 220,000 volts, for purposes of treatment. The finest of all is the equipment at the County Hospital of Copenhagen, where the new "cannon" apparatus is the last word in radiotherapy; this whole department, controlled by Dr. Leif Arnzten, stands by itself as an example of superb equipment and design.

The operating theatres are everywhere designed on a lavish scale and are arranged in self-contained suites of theatre, anaesthetic room, sterilising room, surgeons' room. One of the finest is at Västeras, where the central section of the top floor is given up entirely to theatres. A large sterilising room with completely duplicated equipment is placed between two large theatres. Behind these a very large corridor gives direct access to all three and forms an ante-room. From this opens on the other side, dressing rooms, sisters' stores, a special X ray room for pyelograms and other special work, and a writing room for the surgeons. It is true that modern theatres in this country are arranged in a similar way, but rarely with such convenience and never with so much space and light.

Unlimited Space and Light.

One accustomed to working in a hospital in London is perhaps most impressed by the unlimited space and light available. The wide airy corridors, the large balconies on to which beds can so easily be wheeled, the ample space provided for the operating suites, and the obvious consideration for the comfort and convenience of all those who have to work in the hospitals, are evidence of sound organisation and thorough efficiency.

In the hope that it may be of assistance to those who are anxious to see for themselves the hospitals of Sweden and Denmark, a list is appended of those which appeared best adapted to the requirements of this country.

—	Beds.	—
STOCKHOLM.		
Sophiahemmet ..	95	Private hospital with training school for nurses.
Red Cross Hospital	60	Private hospital.
UPSALA.		
University Hospital	577	Director: Prof. Nystrom; Asst. Director: Dr. Westerborn.
VÄSTERAS.		
Central Lazarett ..	285	Director: Dr. Norrlin; Asst. Director: Dr. Berner.
NORRKÖPING.		
Lazarett ..	350	Director: Dr. Bager.
COPENHAGEN.		
Bispebjerg Municipal Hospital	800*	Surgical Director: Dr. Wessen.
Kobenhavns Amts Sygehus (county hospital)	300†	Medical Director: Dr. Jorgensen; Surgical Director: Dr. Helsted; Secretary: Inspector Knud Warming.

* To be increased to 1800. † To be increased to 1000.

It must not be imagined that these hospitals are a new departure in policy; they are rather part of a steady evolution, the evidence of a very remarkable appreciation in Sweden and Denmark of the value of modern medicine and surgery, and of a determination

to give them every material assistance that is possible. They are State hospitals in the sense that they are built, equipped, and subsidised by the public authorities, but it is very evident that they are no product of a bureaucratic system but of a wholehearted coöperation between the medical profession and the State. In the very best sense of the word they are National hospitals, and we who visited them are convinced that only on the basis of National funds can such services be supplied.

The Defects of the Voluntary System.

Voluntary effort has done magnificent work for the hospitals of this country, but the problem has entirely changed and has passed beyond its powers. On the one hand, owing to the extraordinary advances in medicine and surgery during the last 20 years, it is impossible for private charity to cope with their demands. On the other hand, the sick poor for whom our hospitals were founded have disappeared, and in their place a class is demanding, and in my opinion rightly demanding, admission to our hospitals, who would resent the suggestion that they are the objects of charity. The care of the health of the nation is now recognised to be a function of the State, and it is impossible to dissociate our health from our hospitals. Unless our hospitals are maintained at the highest level of modern efficiency, we are bound as a nation to fall behind.

Far from our hospitals being as they once were the envy of other nations, the great majority are years behind the times, and lack of funds compels the hospitals of our metropolis to carry on their work in the heart of London with an equipment and in surroundings which would not be tolerated in a small provincial town in Sweden. Most of them are in financial difficulties and some are virtually bankrupt, so that it is inconceivable that they should be able to bring themselves up to date, whilst their mere maintenance makes quite unfair demands upon those who have hitherto so generously borne the responsibility upon their shoulders. They have made a gallant fight against social and economic changes which have altered entirely the clientèle which they serve and removed the old sources of their income, whilst they are faced with financial demands such as voluntary effort can never be expected to meet.

The Future.

Is it not time that we recognised these facts and faced boldly a complete reconstruction of our whole hospital system? All of us who have grown up under the old system, where the charity of our nurses, of our doctors, and of the public worked hand in hand to relieve suffering and to help the poor, will view its departure with regret. Yet I feel confident that the future will hold far greater opportunities than the past, and I have returned from my visit to Sweden and Denmark not so much depressed by the backward condition of our hospitals as stimulated by the prospect of the possibilities which lie before us. For I am convinced that we shall set our house in order and regain our lead.

In conclusion, I can only express our gratitude to our friends who placed at our disposal so generously their time and the resources of their hospitals, and most of all to Prof. Viggo Christiansen, of Copenhagen, and Dr. John Hellström, of Stockholm, who organised our visit and to whom we owe its success.

REBUILDING OF MIDDLESEX HOSPITAL.—At a meeting of the Court of Governors last week Prince Arthur of Connaught, the Chairman, gave an account of the progress and finance of the scheme of rebuilding. The work in hand and provided for includes the new west wing, a new nurses' home (an anonymous gift), a new residents' house, a block for paying patients (the gift of Lord Woolavington), an annexe ready to be converted into an out-patient department, and a great central power house, in addition to Mr. S. A. Courtauld's gift of the Institute of Biochemistry. The amount still required to complete the building is £380,000 and there is a gap of about £16,000 a year between receipts and expenditure. A sum of £15,000 is required immediately on current account.

MEDICINE AND THE LAW.

Colonel Kynaston and the General Medical Council.

THE failure of Lieut.-Colonel J. W. Kynaston's action against the General Medical Council blocks one possible avenue by which a medical practitioner, aggrieved at the removal of his name from the Register in consequence of charges of unprofessional conduct, might conceivably succeed in reopening the merits of the disciplinary issue. Nothing is more certain in the legal view of such issues than the fact that, if the General Medical Council has properly conducted its inquiry into the conduct of a practitioner charged under Section 29 of the Medical Act with "infamous conduct in any professional respect," the law courts will flatly refuse to interfere with the Council's finding or to rehear the matter by way of appeal. Colonel Kynaston, therefore, could not possibly succeed in his recent attempt to have the record of his removal deleted unless he could show that the Council had acted without jurisdiction, or with bias, or in some other fashion contrary to natural justice. His attempt was based on three grounds. One of them was a definite allegation of bias. The conduct in respect of which his name was removed from the Register some seven years ago was, he contended, in part a criticism of Sir George Newman's administration as Chief Medical Officer of the Ministry of Health: Sir George Newman was, he complained, a member of the committee which decided the disciplinary issue; *ergo*, the tribunal was biased and prejudiced. When a party enters upon litigation his legal advisers will, of course, expect him to use every possible weapon; Colonel Kynaston, in making what the Lord Chief Justice called a "faint suggestion" of bias in the circumstances stated, may have been relying rather upon a technical than a substantial foundation. The King's Bench Division made short work of his allegation. Lord Hewart remarked caustically that there were only two answers to it: firstly, that there was not a tittle of evidence of bias, and secondly, that Sir George Newman did not take part in the decision.

The other two grounds of Colonel Kynaston's application were less invidious. He maintained that the book and letters in respect of which he was accused of unprofessional conduct amounted to the adoption and advocacy of a theory of medicine and surgery, and was, therefore, privileged under Section 28 of the Act; disciplinary action taken in these circumstances was, he argued, illegal. Further, he claimed that he had applied to have his name removed at his own request before the charges formulated against him were tried; the examination of the charges thereafter was, he contended, improper. On this latter point the judges of the King's Bench Division made it clear that a practitioner, if minded to do acts which would clearly invite disciplinary proceedings, cannot claim to have his name removed from the Register, and afterwards, when those acts have been completed, claim to have his name restored again. Mr. Justice Avory pointed out that the statutory declaration required from a practitioner who seeks to have his name removed from the Register at his own request contains a statement that he is not aware of any proceedings, or of any reason for proceedings, for the removal of his name penally. Mr. Justice Branson remarked that even on such voluntary application the Council is to remove the name "if it thinks fit," so that there still remains a discretionary power in the Council. Looked at generally, as the Lord Chief Justice observed, no small part of Colonel Kynaston's case was an invitation to the King's Bench Division to review the decision reached by the Council seven years ago. "It is well settled," said Lord Hewart, "that the Court has no such power: the Council did the very thing which the law empowers them to do." The matter, he added, which was seven years old, had been stirred, not because any human being could seriously consider that there was any ground for

undoing what the Council had done, but because Colonel Kynaston had been summoned for another offence under the Medical Act, and it was desired to add a make-weight to the defence in those proceedings.

The Police-court Proceedings: Colonel Kynaston's Appeal.

In those police-court proceedings[1] to which Lord Hewart was alluding, a fresh step was taken by Col. Kynaston on July 15th, when he made an application at Marlborough-street police-court with a view to appealing against Mr. Cancellor's decision dismissing summonses against him under the Probation of Offenders Act.

It may seem strange that there should be an appeal where there has been no conviction, but the Criminal Justice Act of 1925 (Section 7, as amended in 1926) allows a person in whose case any order under the Probation of Offenders Act has been made by a court of summary jurisdiction to appeal to quarter sessions as if he had been convicted, provided that he did not plead guilty or admit the truth of the information at the original trial. Mr. Cancellor, it will be remembered, dismissed outright the summons charging the defendant with having wilfully and falsely pretended to be a doctor of medicine. The second summons, charging him with wilfully and falsely using the title "M.R.C.S. Eng.," Mr. Cancellor found proved; Col. Kynaston must, he thought, have known that the use of those letters would lead readers to believe that he was still a member of that distinguished body. The magistrate, however, refused to register a conviction on this latter charge because of the following extenuating circumstances: first, Col. Kynaston had no opportunity of arguing his case before the Royal College of Surgeons; secondly, a somewhat similar summons was withdrawn a year or two ago—a fact which might have lulled him into an erroneous sense of security from further proceedings; thirdly, Col. Kynaston had done distinguished work both in his military service and in his civilian practice afterwards. As, however, the magistrate accompanied the dismissal of the summonses with a serious warning of future penalties if the defendant persisted in publishing the advertisement, it is natural that Col. Kynaston should wish to reopen the decision.

"Wilfully and Falsely."

It was made clear in the previous proceedings against Col. Kynaston that there was no suggestion of fraud. In proceedings under Section 40 of the Medical Act of 1858 it is an important element of the charge that the accused should have "wilfully and falsely" pretended to be, or should have "wilfully and falsely" taken or used a medical title or any name, title, addition or description implying that he is registered or recognised by law as a medical practitioner. The principal leading cases on the meaning of "wilfully and falsely" have been those in which American "correspondence" degrees were in question—an abuse which has now largely ceased. In Andrews *v.* Styrap (1872), Thomas Andrews had used the letters "M.D." after no more elaborate qualification than the purchase (without going to America, studying or passing any examinations for such degree) of a diploma as a doctor of medicine from the University of Philadelphia. Baron Martin, when the case came up to the Exchequer Division, remarked, "this is no diploma at all, it is a mere pretence." The magistrates, he said, were right to convict: "there was ample evidence that the appellant *wilfully* (for he did it on purpose) and *falsely* (because he pretended thereby to be on an equal footing with any regularly bred and registered physician or M.D. in England) took, assumed, and used the title of 'M.D.' under a diploma obtained by him from an American University without any course of previous study or any examination, but simply on the payment of a sum of money, and which diploma therefore he must have known to be in fact utterly worthless and valueless as an indication of the possessor's merit, learning, and skill as a physician or as giving him any of the privileges of a registered medical man." On the other hand, in Carpenter *v.* Hamilton (1877) the accused had held himself out to be "Dr. John Hamilton, Doctor of Medicine of the Metropolitan Medical College of New York," and it was never proved that he did not possess this qualification. "How is it possible," asked Baron Cleasby in the Exchequer Division, "to make out a charge of falsely pretending to be something, when the only evidence is that the man pretends to be what he really is?" Baron Martin's exposition of "wilfully and falsely" in Andrews *v.* Styrap is still relied upon. If it is applied to Col. Kynaston's case, it may be easy to say that the defendant used the letters "M.R.C.S. Eng." wilfully "because he did it on purpose"; it is not so easy to say that he did it "falsely" because his original possession of the diploma was justly founded on established grounds of "merit, learning, and skill." The cancellation of the diploma was not due to any reflection upon his "learning and skill." The law may be clearer when Col. Kynaston's litigation is complete.

[1] See THE LANCET, July 13th, p. 95.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Murder by Strophanthin.

A medical man, Dr. X., was recently tried for murder in Bonn, in curious circumstances. He had an entanglement with a woman, Mrs. Y., who had been a nurse, which was inconvenient in view of his desire to marry someone else. One evening when Mrs. Y. was in the doctor's house, she was heard to cry out that she had been poisoned, and that she wished to be examined at once at the university hospital. Dr. X. himself carried her to the hospital where he declared to a medical officer that she was very hysterical, but that as she complained of heavy pains in the rectum, a rectal wash-out might be indicated. The woman continued to cry that something had been introduced into her rectum, and as she was very excited, she was at once taken to the clinic for nervous diseases, where she died an hour later. At the autopsy, strophanthin was found in the rectum, whereupon Dr. X., whose behaviour had aroused suspicion, was arrested, and tried for murder. At the trial a chemist gave evidence that some days before Dr. X. had presented a prescription for strophanthin in crystalline form. On being informed that strophanthin was in stock only in solution, he had induced the chemist to procure it in crystalline form. In handing over the drug to the defendant, the chemist warned him that it was a strong poison. Defendant replied that he wished to use it for cauterising the nose of a patient. Medical witnesses gave contradictory evidence; a professor of pharmacology stated that though strophanthin might be used for that purpose it was an uncommon technique. A professor of rhinology declared that he had never heard of strophanthin being used for cauterisation. Defendant said that the woman had complained of pain in the rectum, and that he had therefore performed a rectal examination. Being very hysterical she might have taken the drug from his table and introduced it into the rectum herself for suicidal purposes. He admitted, however, that the dead woman had been his mistress. After a trial lasting four days, which caused a great sensation throughout Germany, Dr. X. was sentenced to death for murder. The case is unique, since murder by strophanthin has never before been recorded. The plea of insanity made by the defendant's counsel was not accepted by the Court.

Legal State of Pharmacies.

Dr. Lustig, a government medical officer, recently read a paper before the Berlin Society for Public Health, on the legal position of pharmacies, which is very variable. Certain pharmacies possess rights connected with certain premises, which may date back some

hundreds of years. The rights may be assigned by the owner to another qualified apothecary. Since 1894 no franchises have been granted, but only a personal licence which entitles the owner to open a pharmacy in a street or in a district prescribed in the licence. The licence being strictly personal, it may not be sold to another apothecary; it is annulled by the death of the owner, but the widow may have the pharmacy managed by a locum tenens until her death. The number of pharmacies in Germany is 5600, but there are in Berlin for every pharmacy 6½ drug stores. In the discussion it was stated that the number of pharmacies is much too small; at present no apothecary qualified after 1902 has any chance of being granted a licence, so that the majority of apothecaries are well over 50 before they are able to establish business on their own, if they have not the money necessary to buy one of the old franchised pharmacies. The majority of chemists desire neither a nationalisation of pharmacies nor absolute freedom for qualified apothecaries to open a pharmacy when and where they like, but they want a considerable increase in the number of licences.

The Health of Germany.

The report on the health of Germany in 1927 has lately been issued. It states that the density of the population has increased since 1910 from 124 to 133 per square kilometre, and that of the greater towns from 21·3 to 26·8 per cent. of the entire population. The number of births, being 18·4 per mille, has again decreased by 1·1 from the 1926 figure. Of the European countries, only France and England have a still smaller proportion of births to the population. The general mortality has slightly increased, by 0·4. Infant mortality has decreased to 9·7 against 15·1 in 1913. Of infectious diseases scarlet fever has increased, while measles and diphtheria have kept at the low level observed since the end of the war. Puerperal fever has decreased in incidence of case and in mortality. Of venereal diseases, soft chancre and syphilis have decreased, especially in the larger towns, obviously a result of the systematic attack on these diseases. The mortality of tuberculosis has decreased from 10 to 9·3 deaths per 10,000 inhabitants; Germany has the lowest mortality of all the European countries. The mortality of cancer has increased, being 10·5 per 10,000. The incidence of nervous diseases has increased from 3·1 in the period from 1881 to 1905, to 13·8 per 10,000 inhabitants in 1927. The health of school-children has improved; according to the reports of the school medical officers, 40 per cent. of the children were in a good, 50 per cent. in a satisfactory, and only 10 per cent. in an unsatisfactory state of health. About 5000 dispensaries for infants and little children exist; 350,000 children were sent from towns to the country for recreation. The number of hospital beds per 1000 was 5·5 against 4·3 in 1913.

Statistics of Cholelithiasis.

Dr. Lowe and Dr. Noah have examined 208 cases of cholelithiasis, treated without operation by internal medication. Of the cases followed for at least two and up to seven years, 3·9 per cent. were free from pains, 21 per cent. were not cured, and in 40 per cent. the state was satisfactory. The patients free from pain were for the most part older, whilst 50 per cent. of the uncured patients were under 40 years at the time of their first attack. The results of surgical treatment collected from medical literature were better. Cures claimed by different authors varied between 60 and 80 per cent., the mortality being 4 per cent. The figures for fatal termination in cases treated medically vary between 0·4 and 15 per cent., these wide variations being probably due to the different types of patients; some statistics concern hospital patients, others private patients. The majority of patients who were free from pain had followed no dietary rules, whilst in the uncured a strict diet was ineffective in 80 per cent. The prognosis appears to depend not on the intensity but on the frequency of the attacks; 23 per cent. of the cases gave a family history of cholelithiasis.

RHEUMATISM IN KENSINGTON.

ITS RELATION TO RATS AND DAMP.

IN THE LANCET of June 29th (p. 1363) we commented on the first annual report of the Royal Borough of Kensington upon its Rheumatism Scheme. The authors, Dr. James Fenton and Dr. R. C. Lightwood, made a careful study of the relation between the incidence of acute rheumatism and certain environmental factors, particularly dampness of the soil and infestation by rats. The number of cases was small, but the data are so suggestive that they deserve the closest consideration of all workers on this problem.

The relevant statistical information for the various wards of Kensington is as follows:—

—	Population per residential acre.	Death-rate.	Infant mortality-rate.	Cases acute rheumatism notified.
St. Charles..	173	12·9	77	34
Golborne ..	366	13·8	89	44
Norland ..	156	14·5	80	55
Pembridge..	138	14·1	69	14
Holland ..	67	13·4	67	9
Earl's Court	110	13·7	36	1
Queen's Gate	117	13·2	30	1
Redcliffe ..	117	14·5	56	1
Brompton ..	108	11·3	55	0

Damp Soil.

A damp soil has been believed from time immemorial to predispose its inhabitants to acute rheumatism, but recent work has tended somewhat to shake this view. Kensington is a good area in which to study the significance of damp, for it is traversed by several underground streams, which carry off the overflow from the main drainage system in wet weather and discharge it into the river. Until very recently the coincidence of heavy rain and high tides caused flooding in certain areas. In order to discover whether the distribution of acute rheumatism followed these flood areas, the authors prepared a map of the borough and plotted upon it the houses from which the 159 cases had been notified (Fig. 1). On the same map they marked the flood areas, the exact extent and distribution of which were well known. It was at once apparent that the rheumatism notifications showed a definite grouping in certain heavily populated portions of North Kensington, but the correspondence with the flood areas was not by any means close. South Kensington, which contains only one flood area, but that the largest in the borough, notified only one case. The housing in this flood area of Holland Ward consists of property of comparatively high rateable value, while the property in the flood areas of Notting Dale is rated as low as any in the borough. The authors conclude tentatively that either: (1) dampness of site is not the important factor, unless the housing is in some way defective; or (2) the general, social, and hygienic conditions which go with density of population are of equal or greater importance than dampness itself. Eton College, they remark, stands on low-lying ground by the river, but the incidence of rheumatism among the boys is very low; the adjoining property in Eton town, on the other hand, has a much higher incidence than that of the College. The incidence of rheumatic fever among the troops in winter in Flanders was low, although at times they were living in conditions of dampness almost unbelievable.

Rheumatism in Rat-infested Areas.

Dr. Fenton and Dr. Lightwood then turned their attention to a factor which has probably never before been studied as a possible concomitant of acute rheumatism. At a meeting of the Epidemiological Section of the Royal Society of Medicine in February, 1928,[1]

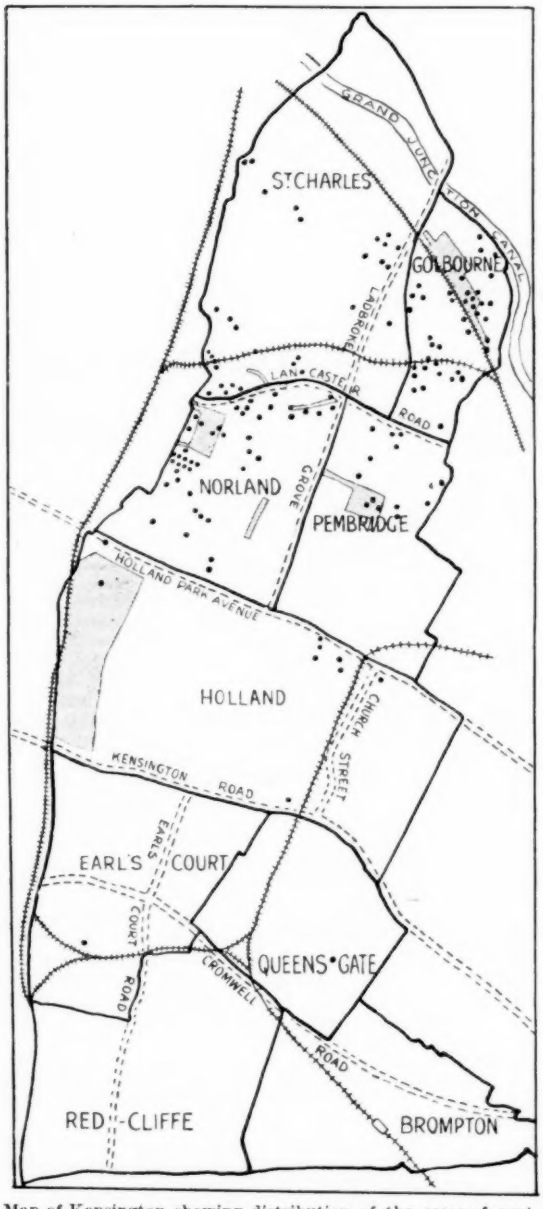
[1] Proc. Roy. Soc. Med., 1928, xxi., 1004

Dr. J. Tertius Clarke brought forward evidence to show that the geographical distribution of rheumatic fever coincided with that of the common rat-flea, *Ceratophyllus fasciatus*. Although Dr. Clarke admitted that his evidence was by no means complete, the authors of the Kensington Report felt that data on the comparative incidence of rheumatism and rat infestation might be of interest. *C. fasciatus* is essentially a nesting flea, and its larvæ do not thrive outside a rat's nest. A marked correspondence between the distribution of rats and that of acute rheumatism would, they considered, suggest that any geographical correspondence between the rat-flea and rheumatism might be something more than a coincidence. The rat-infested areas of the borough were known to the Public Health Department, and were marked off on the map showing the position of the 159 cases of acute rheumatism. It was then apparent that the distribution of rats corresponded to a considerable extent with that of the rheumatism (Fig. 2).

Common Factors.

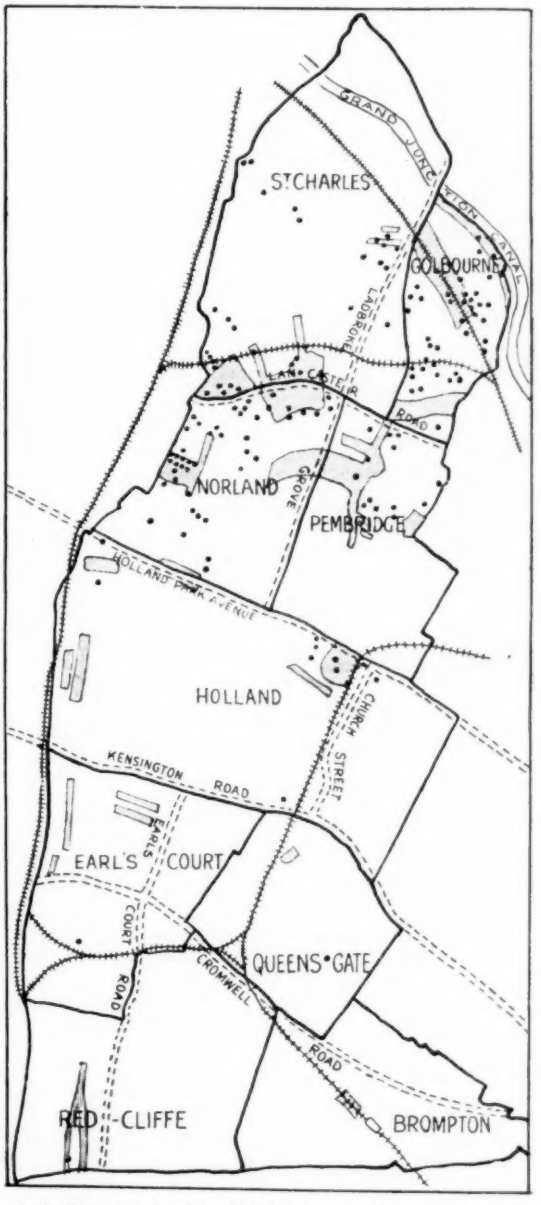
The authors then considered whether there was any third factor common to both which would account for an indirect association between them. The favourite breeding-grounds of rats are railway embankments, allotments, goods yards, warehouses, and similar places, where they are comparatively undisturbed during the night and at week-ends. The map in Fig. 2 shows that rat distribution follows the railway lines to some extent. There is also a certain correspondence between the course of the

FIG. 1.



Map of Kensington showing distribution of the cases of acute rheumatism (black dots) in the several wards of the borough, and the damp areas (shaded).

FIG. 2.



A similar map showing distribution of the cases of acute rheumatism (black dots) and the rat-infested areas (shaded).

railways and that of the old streams. In order, however, to regard the railways as a third factor producing an indirect association between rats and acute rheumatism, it is necessary to assume that dampness and acute rheumatism are related. The report mentions, however, another fact which suggests that rats and rheumatism are related, whether causally or not. Both occur most frequently in defective houses, where rats can gnaw their way into the spaces below the floor-boards in the basement and ground-floors. Rats, moreover, are attracted by untidy yards and kitchens. As we remarked in our previous comment, the work of other investigators has shown that acute rheumatism is very common in needy households, but is rare among the very poor. Social workers know well that the inhabitants of the class of premises which are infested by rats tend to be untidy and wasteful in their manner of life, while persons on the verge of destitution, to whom every scrap of food is important will presumably offer rats little or no hospitality. The Kensington report also shows a close correspondence between acute rheumatism and density of population, another factor favourable to infestation by rats.

These data prove nothing conclusively, but suggest a great deal, and must provoke other workers to make investigations on the same lines. The next report from Kensington, which will show whether the correspondence is confirmed or diminished when the number of notified cases is larger will be awaited with interest.

Public Health Services.

THE HEALTH OF LONDON IN 1928.

Statistics.

Estimated population, 4,458,200. Birth-rate, 16·2. Death-rates per 1000 of the population, all causes, 12·1; pulmonary tuberculosis, 0·89; non-pulmonary tuberculosis, 0·14; cancer, 1·52; pneumonia, 0·93; bronchitis 0·59. Rates per 1000 births: Infant mortality, 67; maternal from childbirth, 3·59.

AMONG the 28 metropolitan boroughs the following are some of the highest and lowest rates. The three highest birth-rates were: Shoreditch 20·7, Finsbury 20·4, Poplar 19·9; the three lowest Westminster 10·4, Hampstead 11·6, Holborn 12·0. The three lowest death-rates were: Lewisham 10·0, Wandsworth 10·9, Woolwich 11·0; the three highest were Shoreditch 13·6, Holborn and Chelsea each 13·5. The three lowest infant mortality-rates were: Chelsea 48, Wandsworth and Woolwich each 50; the three highest were Paddington and Kensington each 85, Finsbury 84. The three lowest phthisis rates were: Hampstead 0·45, Kensington 0·60, and Wandsworth 0·71; the three highest were Finsbury 1·29, Bermondsey 1·28, Shoreditch 1·19. The three lowest rates for maternal mortality from childbirth per 1000 births were: Bethnal Green 1·40, Stepney 2·00, Holborn 2·11; the highest were Westminster 13·06, St. Marylebone 6·82, Stoke Newington 6·45.

Dr. F. N. Kay Menzies points out that, as would be expected in an ageing population, there was an increase in recorded deaths from diseases of the heart and circulatory system and from old age. Fatal street accidents caused 747 deaths, as compared with 669 in 1927, but these fatal accidents to children caused the same number of deaths in both years—viz., 149. The increase in infant mortality from 59 to 67 was largely due to diarrhœa and measles. The death-rate among children under two years from diarrhœa and enteritis was 10·32 per 1000 births, as compared with 7·59 in 1927. During 1928 London was attacked by small-pox of the mild type. The infection was brought to the south of England by a tramp who reached a Sussex casual ward in a collapsed condition in December, 1927, but the nature of his illness was not suspected until secondary cases occurred a fortnight later, the diagnosis being then confirmed by the council's small-pox consultant. By this time vagrants infected in this casual ward had spread the disease over the countryside. In all there were 285 confirmed cases, with one death in Southwark. The London experience showed that vaccination protects equally against the mild and the more virulent forms of small-pox.

The deaths from measles totalled 1358, the highest number since 1922. Measles was prevalent in London both in 1917 and 1918, and since then has been epidemic in alternate years. It is due again next winter and likely to be accompanied by a prevalence of whooping-cough above the average.

Maternal Mortality.

Dr. Menzies devotes much consideration to the statistics relating to maternal mortality and puerperal fever. In the first place he points out that the fertility of married women of the "better" class is lower than that of the poorer class owing to the higher age at marriage, but that only a relatively small proportion of the difference in the extremes of social class is attributable to difference in the actual age of the mothers. In the census for 1911 the social grouping is faulty, but appears to indicate that the fertility in the lower groups is one and a half times that of the higher groups. Dr. Menzies, on the other hand, gives figures which indicate that the fertility of the mothers of elementary school-children is 3·6 times that of other mothers in the County of London. He stresses the point that much more accurate data for social grouping should be obtained in the forthcoming census of 1931. The metropolitan boroughs which had a low maternal mortality in 1920–27 were Finsbury, Shoreditch, Greenwich, and Stepney, and in all of them the proportion of illegitimate births was low, whilst in Chelsea, St. Marylebone, Westminster, and Stoke Newington, where the highest maternal mortality occurred, the percentage of illegitimate births was generally high. During 1901 to 1910 there was a considerable decrease in maternal mortality attributable probably to the provision of better-trained midwives. Since this period the decline has been much less. In order to define and direct measures for the improvement of maternal health is is essential that greater attention should be given to records bearing upon maternal conditions, and one detail needed is a record of the age of the mother when each birth is registered. This point was especially emphasised by Dr. T. H. C. Stevenson in his evidence before the National Birth-rate Commission in December, 1914, but no action has yet been taken. Dr. Menzies gives figures to show that maternal risk in childbirth is lowest at ages under 25 years and increases rapidly with age after the thirtieth year, and that in such a comparison allowance has to be made for the double risk at a first confinement.

Another point brought out by the figures is the inverse relation of maternal mortality and fertility. A woman marrying at 18 and having three children before the age of 25 has a death risk of 2·07 per 1000 children born, whilst a woman marrying at 33 and having three children before the age of 40 has a death risk of 5·86 per 1000 births. Figures from New South Wales show that the maternal mortality-rate would be at a minimum if each married woman had four children. After the fourth child the risk increases. Other points are that a smaller family increases the maternal mortality by exaggerating the effect of first confinements and that the decrease in childbirth mortality among women under 30 is greater than the decrease in other causes of death, which recalls the fact that there has been lately noted in London an increased mortality among single women from phthisis.

Puerperal Sepsis.

Dr. Menzies questions the deductions made in the Aberdeen report on puerperal sepsis, issued by the

Scottish Board of Health in 1928, and gives his reasons for so doing. He goes on to produce evidence that the resistance to puerperal fever diminishes markedly with age, and to show fluctuations in the annual puerperal sepsis rates, which indicate a close interdependence of movements in the mortality from erysipelas, puerperal fever, and scarlet fever, an interdependence which was pointed out 50 years ago by Dr. G. B. Longstaffe in a paper read before the Epidemiological Society. There are no reliable figures available as to the percentage of sterile women, and the operations of birth control in reducing fertility is an unknown factor. Economic stress by increasing the proportion of unwilling mothers may prejudice the normal risk and excessive spacing of confinements may also increase the risk by bringing about conditions approximating to those of first confinements. The conclusion drawn from this statistical analysis is that the sustained rate of maternal mortality, in spite of improvements in the maternity service, is in general terms the result of the repression of natural fertility brought about by economic conditions, but the tentative character of the statistics is stressed and the need for more detailed records relating to the maternal state.

Disease Incidence.

The notifications of *enteric* showed an increase from 322 in 1927 to 580 in 1928, largely owing to the outbreak of paratyphoid B attributed to infected cream. There were 41 confirmed cases of *poliomyelitis*, of which 9 ended fatally. There were five more fatal unnotified cases of this disease. There were 83 confirmed cases of *encephalitis lethargica* of which 27, or 32 per cent., were fatal. There were 22 additional deaths from this disease amongst unnotified cases, in many of whom the post-encephalitic symptoms were not observed until years after the mild primary illness. The M.A.B. has now provided 50 beds for persons over the ages of 16 suffering from post-encephalitic symptoms. *Influenza* caused 590 deaths as compared with 1815 in 1927, but during the last weeks of 1928 there were signs of an epidemic in the north which later became general, and in the first quarter of 1929 there were more deaths from influenza than in any first quarter since the great epidemic of 1919. *Acute rheumatism* under 16 is now notifiable in Holborn as well as in Kensington and Paddington. A comparison of the mortality from acute rheumatism in various groups of boroughs lends no support to the effect of social conditions in the causation of this disease.

Tuberculosis.

There has been practically no decrease in the mortality from pulmonary tuberculosis in London during the past three years. The experimental scheme, begun in 1926, by which the tuberculosis dispensaries could obtain artificial light treatment at certain hospitals and centres, was very little used by the tuberculosis officers of the 19 boroughs concerned, and further experience confirms the view expressed in last year's report that the best results are obtained when light treatment is given as an addition to the fresh air, good food, and regular régime provided in a residential institution in the country. The present scheme is therefore to be dropped. The scheme for boarding out children who are contacts with advanced pulmonary tuberculosis has been continued; 149 children were accepted and 52 were being boarded out at the end of the year.

Underground Rooms.

Existing legislation for the control of underground rooms has been directed almost exclusively to the regulation of such as sleeping-places, but Dr. Menzies points out that the use of basement dwellings as living rooms is particularly injurious to the health of the women and children, who mainly occupy them during the daytime and that there is no statutory power to close only part of a house. The council is therefore considering the promotion of further legislation to deal with the whole problem of underground rooms.

Milk.

During 1928 the biological examination of 1605 samples of milk from 40 counties was completed and 143, or 8·9 per cent., were found to be tuberculous. As the result of following up by various county medical officers of health 66 tuberculous cows were found and slaughtered under the Order. The difficulty of tracing is greatly increased by the bulking of the milk at country depôts prior to despatch and this is more than ever the case since the introduction of glass-lined tanks. For example, one of these containers may hold 3000 gallons of milk, which may have come from 200 farms. On the one hand, the introduction of a single infected milk infects the whole of the tank; on the other hand, a massive dose of tubercle bacilli is diluted. The attention of the Ministry of Health has been drawn to this matter. Another point that has arisen out of milk examinations is that the guinea-pigs frequently die from an acute intercurrent infection. Such cases have been reported to the authorities responsible for supervising the farms and have been found useful as a lever for the removal of insanitary conditions on the farm. In 1888 there were 738 licensed cowhouses in the county. In December, 1928, there were only 55, chiefly in the rural districts of Woolwich and in Stepney and Bethnal Green, where the considerable Jewish population, from religious motives, are always anxious to obtain fresh raw milk. In the case of the imported milk for the year ended June 30th, 1928, 7·6 of the samples were tuberculous and 18·9 per cent. of the guinea-pigs died from intercurrent infection, whilst in the case of the milk produced in London 6·7 per cent. of the milk samples were tuberculous and 7·5 per cent. of the guinea-pigs died from intercurrent infection, so that the comparison is in favour of the London-produced milk. The description of the powers wielded under the various Milk Acts by the L.C.C. and the boroughs respectively appears to be dual responsibility at its worst.

Venereal Diseases.

The number of attendances under the V.D. scheme per new V.D. case shows another great increase, and the number of non-venereal cases attending the clinics has increased from 2360 in 1917 to 10,164 in 1927, and 9595 in 1928.

A New Hospital.

Dr. Menzies mentions that the rapid growth of the population on the Becontree Estate has created a need for hospital accommodation and that the trustees of King Edward's Hospital Fund and the Ministry of Health have each agreed to contribute £10,000 towards the capital cost if an equal amount is subscribed from other sources and the details of the scheme are satisfactory.

MENTAL HOSPITAL REPORTS.

THE 116th annual report of the *Royal Edinburgh Hospital, Morningside*, is illustrated by two line drawings of the Jordanburn Nerve Hospital and the out-patient department, and opens with a historical retrospect and survey of psychology in social life.

The Jordanburn Hospital is an entirely new venture under the new Charter, and is a voluntary institution for patients suffering from all that is comprised by the term "nerves." Its out-patient clinic is held every morning and provides facilities for every modern psychological investigation and treatment, including a child guidance clinic, social service department, mental deficiency section, and neurological department. The scheme will be completed later with the erection of laboratories in connexion with the magnificent lecture theatre. In the six nursing homes associated with Morningside and situated in the suburbs of Edinburgh, there were 63 patients at the end of 1928. These are specially equipped for nerve patients, and each has its own peculiar features, so

that a change from one to another can often be made with benefit. The number of admissions, from all parts of Great Britain, is steadily increasing. At the main institution there were at the end of the year 155 voluntary and 705 certified patients. During 1928 applications for admission were received from 114 voluntary patients, and 98 certified. The medical superintendent discusses again the lamentably small number of poor voluntary patients received into the mental hospitals of the country. The usual details and tables are not supplied with this report.

The 128th report of the *Aberdeen Royal Mental Hospital* for 1928 records that there were 810 patients at the end of the year; 21·8 per cent. of the private admissions were on a voluntary basis, but only two rate-aided voluntary boarders were admitted. Seventy-six of 181 admissions were suffering from some bodily illness, and 12 from epilepsy. One general paralytic was discharged as cured without having had any special treatment, and five were able to return to work after malarial inoculation. The total recovery-rate was 25·96 per cent., and the death-rate 8·3 per cent. Six cases of paratyphoid occurred on the female side, and there were two cases of scarlet fever. T.A.B. vaccine and scarlatinal antistreptococcus serum were used respectively to immunise the contacts. The dentist examined over two hundred patients, of whom 170 required treatment. Eighty-two patients received ultra-violet radiation, most of them on account of physical conditions; anæmia was benefited and sleep, appetite, and weight improved. No lasting mental improvement was observed. Nearly a hundred cases were X rayed during the year. Rather more than a hundred patients were employed in the occupational therapy department on very varied crafts, and many discharged patients continue the work in their own homes. Research work is being carried on in the laboratory in addition to a large number of routine investigations. A cinematograph with non-inflammable films has been bought for the branch institution at Daviot, and has given much pleasure; one unfortunate patient had never seen a moving picture before, and was greatly alarmed at the first entertainment!

The *Glasgow Royal Asylum* publishes for 1928 its 115th annual report, illustrated as usual by a number of photographs. There were 536 patients resident at the end of the year, and 68 of the 135 patients admitted were voluntary boarders. Forty-five patients were discharged recovered and 34 greatly improved. The death-rate was 4·7 per cent. In redecorating the building attention has been paid to the influence of colour schemes on mental health. The kitchen has been centralised and reorganised, and much labour saved thereby. The seaside home at Skelmorlie and the nursing home at Dowanhill continue to render valuable service. The visiting dentist reports that he saw 204 patients, and practically none of them objected to treatment. The occupational therapy officer describes a very successful year in her department. Many patients on parole spend their day there, and some of them take away material to work at in their rooms. Every now and then a handicraft is dropped altogether so that it can be taken up later with a feeling of novelty. Nurses and attendants work among the patients and help the atmosphere of industry and life in the department. The amount realised from sales has more than defrayed the cost of materials. Four nurses and five attendants passed the senior examination of the General Nursing Council. The medical superintendent emphasises again the need for a psychiatric clinic, and discusses the popular attitude to mental illness.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 20TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 144 (last week 115); scarlet fever, 1864; diphtheria, 949; enteric fever, 56; pneumonia, 935; puerperal fever, 46; puerperal pyrexia, 87; cerebro-spinal fever, 12; acute poliomyelitis, 9; acute polio-encephalitis, 1; encephalitis lethargica, 28; continued fever, 2; dysentery, 11; ophthalmia neonatorum, 129. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on July 23rd–24th was as follows: Small-pox, 173 under treatment, 3 under observation (last week, 198 and 11 respectively); scarlet fever, 1405; diphtheria, 1645; enteric fever, 11; measles, 298; whooping-cough, 373; puerperal fever, 31 (plus 11 babies); encephalitis lethargica, 124; "other diseases" 24. At St. Margaret's Hospital there were 19 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 38 (8) from measles, 1 (0) from scarlet fever, 25 (8) from whooping-cough, 16 (4) from diphtheria, 65 (13) from diarrhœa and enteritis under two years, and 27 (2) from influenza. The figures in parentheses are those for London itself.

Birmingham and Liverpool each reported 6 deaths from measles, Leeds 4, and Bradford 3. Whooping-cough claimed 3 victims in Birmingham. Diarrhœal deaths were at their maximum in Liverpool 8, Birmingham 7, and Wolverhampton 3.

The number of stillbirths reported during the week was 291 (corresponding to a rate of 42 per 1000 births), including 50 in London.

Death from Small-pox.

THE fatal case reported last week from Stepney was that of a female infant, aged 3 days, whose certificate was filled up thus: 1. (*a*) Small-pox, (*b*) Unvaccinated, born with a rash, mother suffering from small-pox: 2. Prematurity. Dr. D. L. Thomas, medical officer of health, tells us that the infant's mother, having had a rash for about a week, was taken with labour pains on June 29th and removed to the Mile End Hospital where she gave birth a couple of hours afterwards. The baby, it seems, showed no rash for the first 12 hours, but when seen on July 1st had a profuse eruption. The case is an interesting one, inasmuch as the baby contracted the disease in utero.

ROUSSEAU'S RETREAT AS TUBERCULOSIS HOSPITAL. The Stoke-on-Trent City Council has obtained an option for the purchase of Wootton Hall as a tuberculosis hospital. Wootton Hall, which is romantically situated on the Staffordshire bank of the Dove, was from March, 1766, to May, 1767, the home of J. J. Rousseau, who there wrote the early part of his "Confessions." The village of Ellastone in which it stands is the Hayslope of "Adam Bede," and Wootton Hall is the Donnithorne Chase of that book.

VILLAGE SETTLEMENTS AND CENTRES.—Last week the Duke and Duchess of York paid their second visit within five years to the Papworth (Cambridgeshire) Village Settlement for Consumptives. The Settlement, which came into existence 12 years ago, with two shelters in a garden, is now a community of 700 persons who are able to support themselves by various handicrafts. The ex-patients live in cottages amid perfect sanitary conditions, and although 160 children have been born of parents one of whom is tuberculous, no trace of the disease has been found in any of them. The Papworth Industries have increased their turnover from a few hundred pounds in 1918 to £54,000 in 1928, and men and women who would normally be unemployable have received £112,000 in wages.—At the annual meeting last week of the Village Centres, Curative Treatment and Training Council, Incorporated, Field-Marshal Lord Plumer, who presided, reported that the income had fallen off. No appeals for money were made during the last two years, for fear of conflicting with those for the Haig Memorial Homes, nor had there been any appeals on Armistice Day, yet only £16,500 had been received from the British Legion. The factory is working efficiently, but it was stated that an income from donations and subscription of at least £7000 per annum is required; last year there was a loss of £400.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Adjournment for Summer Recess.

Parliament adjourned on Friday, July 26th, for the summer recess. Both Houses will reassemble on Tuesday, Oct. 29th. The Royal Assent was given by Commission to the following Acts:—Colonial Development Act and the Housing (Revision of Contributions) Act.

Poor-law Administration.

In the House of Commons on Tuesday, July 23rd, Mr. Neville Chamberlain moved that a humble address be presented to His Majesty praying that certain Orders made by the Ministry of Health, dated June 27th, 1929, in reference to the Bedwelty, Chester-le-Street, and West Ham Unions, in which appointed guardians are functioning under the Guardians (Default) Act, should be annulled. He said that the Orders purported to extend the period of office of the present appointed guardians until August 2nd, but he understood that the Minister of Health intended to dismiss them on that date and by a new Order to substitute other appointed guardians who would function until April 1st next. Since the appointed guardians had been at work all further borrowing by the unions concerned had ceased and the financial position had improved. In addition, the West Ham appointed guardians had increased the efficiency of the medical and nursing service at the hospital by appointing four consultants—a gynæcologist, an orthopædic surgeon, an ophthalmic surgeon, and a neurologist. They had appointed a dentist and an anæsthetist, they had added one medical officer to the staff, and had substituted 14 staff nurses for a corresponding number of probationers. In the children's homes they had provided a new and more varied diet at an additional cost, and had changed the clothing of the children, which was heavy and unsuitable, for lighter and healthier garments. They had encouraged games and outdoor exercises for the children, and had also encouraged them to join the local groups of boy scouts and girl guides. In place of part-time district medical officers full-time medical officers had been appointed, and the number of district nurses had been increased. The report on their work showed that not only was the administration of the old guardians extravagant but also grossly inefficient, and the hard-hearted, callous bureaucrats, as they were described by hon. Members who did not approve of anything that the late Government did, had really effected a revolution in the efficiency of the service as well as in the financial position. Now these people were to be swept away as if they had done something to be ashamed of instead of pulling West Ham out of chaos into order, and in their place were to be put people who would be nominated by the local authority. In view of statements which had been made by members of the Labour party in the West Ham area, and the fact that under the Local Government Act something like £250,000 of public money was to be handed over from the Exchequer to be distributed in that area towards the local rates, he thought there was danger in the course which the Minister of Health proposed to take. He hoped that Mr. Greenwood would indicate that he stood up for the best principles of poor-law administration, and that he was not prepared to commit himself to practices such as those which led to the passing of the Guardians (Default) Act.

Mr. Greenwood, Minister of Health, said that he wished to see boards of guardians doing their honest duty in an enlightened and humane way, without extravagance and without placing an enormous burden on the other people who were paying the rates and who in many cases he realised were very little better off. He had no reason to believe that they would not get wise and fair administration from the newly appointed boards of guardians when they took office. All or most of them were persons of considerable experience; they were being given a trial trip and they would be able ultimately to introduce the county councils and the county borough councils in those areas to the real problems which they had to face. He could think of no other way of dealing with the question than the one he had adopted. He could not have squared it with his conscience to leave the three appointed guardians there for another eight months.

After further debate,

The Constitutional Issue.

Miss Susan Lawrence, Parliamentary Secretary to the Ministry of Health, said that there was a serious constitutional issue involved. The late Minister of Health took power to himself to appoint three persons or any number that he liked as guardians. He fixed their salaries and he could appoint them for a given time. For the acts of these persons the Minister was not accountable to Parliament. It might be said that there were precedents. Mr. Chamberlain had tried to cover himself with the name of Mr. Gladstone by pointing out that the great Act of 1870 allowed of the supersession of a school board and the appointment by the Minister of substitutes. But in that case the Minister had to certify the expenses of the displaced school board, which brought them under full Parliamentary control. So in later Acts, such as the Public Health Act of 1875, the power was taken to place the Minister—that was Parliament—in the room of local authorities, but there was not a single other Act which allowed the Minister to have at his disposal persons for whom he could not answer to Parliament. It would be a real danger if such a class of persons were allowed to grow up, particularly in local government. They saw abroad the degradation of local government by these quasi-executive ambiguous officers like burgomeisters and préfets, persons clothed with the authority of the executive and charged from headquarters with keeping the local authorities in their places. Whatever might have been wrong the remedy put forward by the Guardians (Default) Act was the wrong remedy.

Mr. Chamberlain: Will the hon. lady explain how she has met that constitutional point in the change which is proposed to be made by these Orders?

Miss Lawrence: Unless some Order of this kind was made there could be no board of guardians. We could not have an election without legislation and we could not allow all poor-law relief to lapse. We therefore made what I call a gesture and handed over in effect the nomination of these persons to the elected authorities who will deal with them now.

The motion for an address was negatived by 284 votes to 154.

The Housing Subsidy.

The Housing (Revision of Contributions) Bill passed through Committee and was read the third time and passed.

The National Radium Trust.

On Wednesday, July 24th, the House went into Committee on a supplementary vote of £100,000 as a grant-in-aid of the National Radium Trust. Mr. Dunnico, Deputy Chairman of Committees, was in the Chair.

Mr. Greenwood, Minister of Health, said that he did not imagine that there would be much controversy about this vote. It was an inheritance which had come to him from the late Government, and its purpose was to provide for a grant-in-aid of the National Radium Trust, subject to a maximum of £100,000, based on £1 for every £1 of voluntary subscriptions; for augmenting the supply of radium for use in the treatment of the sick, and for the advance of knowledge of the best method of rendering radiological treatment. The money would be expended by the trust under the terms of a Royal Charter incorporating that body. The recommendations of the Radium Subcommittee of the Civil Research Committee, published in a report early this year, were accepted in principle by the late Government subject to further consideration on matters of detail. Since that time a consultation had taken place with the leaders of the various branches of the medical profession, and certain minor changes had been made in the proposals of the subcommittee. It was finally thought to be expedient to appoint the Radium Trust and the Radium Commission through the instrumentality of a Royal Charter, and a Royal Charter had now been received from the King empowering the establishment of the Trust and the Commission. The Trust would hold the money and would be responsible for the actual ownership of the radium. The Commission would be the body responsible for its custody, care, and utilisation. The Radium Trust would consist of the Lord President of the Council, who would be chairman, the Minister of Health, the Secretary of State for Scotland, the President of the Royal Society, the President of the Royal College of Physicians of London, the President of the Royal College of Surgeons of England; the chairman of the Central Liaison Committee for Voluntary Hospitals in Scotland, the President of the Royal Society of Medicine, and the President of the British Medical Association. The Trust were also required to coöpt two medical members of the Commission and might coöpt not more than three other persons. That matter was now under consideration, and it would be the function of that body to accept and to hold the funds which had been subscribed and to purchase the radium. The Radium Commission, which would be responsible for the custody, distribution, and use of the radium, would consist of a chairman to be appointed by the Trust; four members nominated by the Minister of Health, the Secretary of State for Scotland, the Medical Research Council, and the Department of Scientific and Industrial Research; and six members having special knowledge and experience of the application of radium in the treatment of the sick. These six persons were to be appointed by the trustees from a panel of 12.

and would be selected by the heads of the medical profession named in the Royal Charter. A meeting was being held that week at which the panel of 12, he understood, would be selected. Within a few days a preliminary meeting of the Radium Trust would be held and arrangements were being put in hand as rapidly as practicable under the circumstances. It was quite clear that as these bodies had not yet formally met that there might be some little delay in getting the scheme fully into operation. The radium had to be purchased, and purchased under the most advantageous terms. The Commission had to consider what were the best and most effective ways in which the radium could be used, but the Lord President of the Council and he had been very anxious that the scheme should be put into operation, and within a day or two the Trust would hold its first meeting. The Vote would be accounted for by the Ministry of Health but the expenditure of the grant-in-aid would not be accounted for in detail by the Controller and Auditor General. By the terms of the Royal Charter the accounts of the Trust and the Radium Commission were to be prepared in the form and audited in the fashion that the Treasury might direct, and the Radium Trust were required, if the Treasury so desired, to furnish to Parliament reports and audited financial statements relating to the work of the Trust and the work of the Commission. He understood that the Treasury proposed to ask the Auditor General to audit the accounts of the Trust and Commission, and to direct the Trust, as it had power to do, to furnish an annual report including its audited financial statement to Parliament. In that way Parliament would be able to keep control over that part of the fund which had been raised from public sources.

The Increasing Demand for Radium.

Sir KINGSLEY WOOD said that the expenditure of this money represented a substantial step in the campaign against one of the most distressing maladies known to mankind. Unfortunately the cases of cancer in this country were on the increase, and up to the moment no investigation had been able to show the cause of the disease. He thought, however, that it was generally agreed that radium was one of the most hopeful forms of treatment to-day and the demands for it in this country were increasing and urgent. The expenditure of this money was attended with a certain amount of difficulty because radium was found in only a few spots in the world and was a very costly substance indeed. One was almost driven to the conclusion that the money that was to obtain 20 grammes of radium for this country would have to be expended in a country which was practically the only country supplying radium in any quantities to-day—namely, Belgium. He hoped that the greatest care and vigilance would be exercised in order to avoid undue demands being made on this country in the matter of price. It did not appear that at the present moment any of this money could be spent in the British Empire. It would, however, be a great blessing to mankind and desirable, from the point of view of expenditure, if radium in any quantities could be found in Australia or in any other part of the British Empire, or for that matter in any other part of the world. He did not say for a moment, because he had no evidence of it, that there was a hold up in this connexion. It was right that they should remember that the process of extracting radium was very expensive. It was a matter of regret to read in the report that while it was perfectly true that the radium practice was as good in this country as in any other, certainly we were not leading the way in developing the treatment and such countries as Sweden and France were ahead of us in the provision which they made for the treatment of cancer. He hoped that we should not remain much longer in a secondary position in regard to that matter, quite apart from the expenditure of this money. He would suggest to the Minister of Health the advisability of increasing the number of surgeons associated with radium treatment. Not only did they want a great deal more radium but they wanted a good many more skilled people to administer it. Radium was a double-edged weapon, and if it was used unskilfully it could undoubtedly bring tremendous mischief in its train. He hoped that there would be fair treatment in regard to the distribution of radium among the various hospitals up and down the country. He knew, having regard to the amount of radium available, that up to the present time there had been a great waste going on, and he thought that the various kinds of diseases likely to be successfully treated by radium should be concentrated in certain centres. This would allow a great saving to be effected. One had to recognise the various individual interests of hospital associations, and he was afraid in many respects that what he had suggested might be somewhat difficult in practice. In France they had a dozen special centres for radium treatment. In that way they were able to save a good deal of waste and they were able to use radium more frequently to the advantage of the people than we were able to do, because our centres were scattered up and down the country among a large number of institutions. He was very glad that this estimate had been presented and he was sure that it would meet with approval in all parts of the House. This was a practical means of acquiring a sufficient amount of radium to meet the immediate needs of so many people who were suffering from cancer, and who very often were needlessly suffering from that terrible disease. He was sure that no one in that House desired to challenge the expenditure and the sum of money which would do so much to relieve, and he hoped in many cases cure a very large number of people who were suffering from cancer.

The Difficulty in Obtaining Radium.

Dr. HASTINGS said that he hoped that the Committee would agree with the terms of this supplementary estimate because the terrible need for more radium was constantly being pressed upon him. Like a good many other members of his profession who were dealing with cancer he was constantly finding that he needed radium for the treatment of his patients, and it was very hard to obtain it. On the previous morning in hospital he saw a good many cases of cancer, and for two of them he needed radium. He asked the radium officer at the hospital with which he was connected how soon a supply of radium could be obtained, and he said, "Not for a month in either of those two cases." That meant that while those two cases were waiting, and he was waiting to carry out the proper method of treatment, the disease must be steadily advancing. The same thing applied to other hospitals. On the following morning he hoped to be using radium for the treatment of cancer, but he had had to wait 20 days to obtain the necessary supply commercially. He was quite sure that every Member of the House wished to see this country take and keep its place in scientific advancement of medicine as well as in other subjects. It was with regret that he had to agree with what was said by Sir K. Wood to the effect that during the last few years a much greater advance had been made in radium treatment in Sweden and France than in this country. Anyone who made inquiries as to why this was the case would find that the Government of France possessed no less than 31·5 g. of radium, which was allocated to various treatment centres, whereas, as far as he knew, the Government of this country, through the Medical Research Council, possessed not more than 2·4 g. Some two years ago he had occasion to investigate the results of radium treatment of cancer of one organ of the body which involved the results of the experience of some 15 years. When he came to look carefully into those results he was obliged to confess how unsatisfactory they were. Good had undoubtedly been done by treatment in some cases, but he could not point with certainty to a single patient that had been cured. But to-day things were very different. During the past few years extraordinary advances had been made, and now we were able to do with radium things which they never dreamed were possible two or three years ago. Now, in the opinion of many surgeons, it was better to treat a good many forms of cancer even in their early stages by radium rather than by cutting away the growth, because the radium treatment left the condition of the patient much more like normal. They had to remember the terrible ravages of cancer at the present time. It was a fact that no less than 54,000 people died of cancer in this country in 1927. There was no doubt that a good many of those lives might have been saved if there had been a sufficient supply of radium in this country to give them the necessary treatment. Treatment by radium was not a simple thing, because it required experience and research. The recent improvement in this and other countries in this kind of treatment was the result of research. In his opinion the advances made in this country had been due to a very large extent to the exceedingly wide use which the Medical Research Council had made of the 2·4 g. which the Government placed in their charge. Efficient treatment by radium meant two things; in the first place it meant that there must be careful, painstaking research, and, secondly, pooled experience. When these two things were combined they would get the advance which they all desired. He wished that the Government had undertaken a bolder policy. The shortage of radium in this country was a national disgrace. To give help and hope and a fair prospect of a cure to those suffering from cancer appeared to him to be a national duty. He would have liked to see the Government shouldering this duty completely; and to leave sufferers from cancer even to the extent of 50 per cent. to the whims of private charity seemed to him to be a misfortune. The Government had decreed otherwise, but he hoped that the next time that they dealt with the sick of this country they would go the whole way.

Sir CHARLES CAYZER urged that the provincial hospitals should get equal treatment with the London hospitals in the distribution of radium. He would also like to know whether the provincial hospitals would have the right to send the funds which they had raised locally to the Central Com-

mission and ask them to buy radium for them? If that was not so the price might be raised against these provincial hospitals. He asked for an assurance that the provincial hospitals would have a representative on the Radium Commission.

Mr. HAYCOCK expressed disapproval of the dimensions of this Vote. When they thought of the number of people who were suffering from cancer they must realise that they were not even scratching the surface of the problem. He believed that not one person in 50 who ought to get the treatment was getting it. £100,000 was one-eighth of the price of a modern Dreadnought. If they had any sense of proportion they would realise that it was more necessary to spend money on radium than on Dreadnoughts. It did not pay individual surgeons to invest their time and money in learning how to use radium. There were two twin radiologists who decided not long ago that they would commit suicide because they could not afford to carry on. There was a surgeon in Manchester who if he had devoted his time and his very great abilities to an ordinary practice would have made a very large income, but that man after investing his best abilities and his capital was rewarded by poverty. It was a disgrace that real benefactors who were doing something to make this world less a home of agony could not provide for their bread and butter in their old age or ill-health. If the House knew what the real requirements were in regard to the treatment of cancer they would be glad to spend much more than £100,000 on research work and on the purchase of radium.

Reply on the Debate.

Miss SUSAN LAWRENCE, Parliamentary Secretary to the Ministry of Health, replying to questions raised by hon. Members in the course of the debate said that she would remind the Committee that when the new Government took office they found this matter in a very advanced stage. She did not think that the House or the medical profession or the sufferers themselves would have thanked the Government if they had held up the scheme for six months in order to get a better one. Their immediate duty was clearly to subscribe the £100,000 and to get the machinery which was almost ready for work into action at the earliest possible moment. If they were starting again perhaps like many others they could suggest a better machine, but to scrap a machine which was practically in working order would be very wrong. By the fact that there would be one big buyer instead of a number of little ones they were far more likely to be able to obtain radium at reasonable prices. With regard to the possibility of obtaining radium from Australia, the Commonwealth were themselves considering and discussing that matter. The House must exercise a little patience; they would be in a much better position to judge with regard to prices when the Trust had been functioning for some little time. As to the position of the provincial hospitals, the object of the Commission would be to secure the best and most equitable distribution of the radium. The substance was capable of continuous use, and could be used far more profitably if they concentrated treatment in centres able to take a sufficient number of patients so as to secure continuous use of the remedy. It was calculated that the money available—about £384,000—would purchase about 17 g. of radium, and it was the opinion of the experts that they would have as much as could be used at present, for their present difficulty was not so much the purchasing of radium as acquiring a sufficient number of persons, medical men and assistants, who were capable of handling the substance. That matter was at present engaging the earnest attention of the Minister of Health and he hoped to be able to make some announcement on the subject.

The Vote was agreed to.

On Thursday, July 25th, on the report of a supplementary vote of £100,000 as a grant in aid of the National Radium Trust,

Mr. GREENWOOD, Minister of Health, replying to questions by Lieut.-Commander Kenworthy and Captain Bourne, said he was considering the question whether the supply of radium could be explored through the machinery of the League of Nations. The health section of the League of Nations had already had radium under its notice, and had recently published a highly technical report on the subject. On the question of the purchase of the radium; that was a matter, of course, for the Radium Trust, but the general idea was to purchase by instalments. If they went into the market to buy £250,000 worth or more of radium, obviously they might have the market put up against them, and a great deal of care would have to be taken. He imagined the procedure would be to buy in a favourable market. It was not proposed that the Commission should operate at a profit. Local hospitals would not be given the radium; it would be lent to them, but it would continue to be held legally by the Trust. It was proposed to make a small charge for the loan of the radium towards the cost of the administration of the scheme, and it was in that respect primarily that the accounts of the Commission would come before the House.

The report of the Vote was agreed to.

HOUSE OF LORDS.

WEDNESDAY, JULY 24TH.

THE CENSUS AND HOUSING CONDITIONS.

Lord BALFOUR of BURLEIGH asked the Government whether, in order to secure full information as to the existence of overcrowding, steps would be taken to distinguish in the Census of 1931 between houses of four and five rooms, and between rooms used for living and for sleeping purposes.

Lord ARNOLD (Paymaster-General) said that the whole question of the particulars to be asked for in the Census of 1931 would receive the careful and earnest consideration of the Government at an early date, with a view to seeing how far changes should be made in them so as to enlarge the general information as to the housing conditions of the people. It would be appreciated that it must inevitably be a case of balancing the demand for various information against the undesirability of overloading the Census paper. The Government recognised the importance of obtaining through the Census as complete information as possible in regard to overcrowding, and he could assure Lord Balfour of Burleigh that the particular suggestion which he had made would be very fully examined.

HOUSE OF COMMONS.

WEDNESDAY, JULY 24TH.

Injuries from Broken Glass.

Mr. DAY asked the Minister of Transport whether his attention had been drawn to the many accidents during the previous 12 months in which the public had suffered severe injuries caused by flying broken glass; and if he would consider, in conjunction with the Home Secretary, a regulation making it compulsory for all public service vehicles to be fitted with unsplinterable glass.—Mr. HERBERT MORRISON replied: I am, of course, aware that injuries have been caused in motor accidents by flying broken glass, though I am not aware that the prevalence of injuries of this nature has been marked during the past 12 months. While I am anxious to encourage the use of some form of unsplinterable glass in public service vehicles as an additional measure of safety, I am not at present satisfied that it would be practicable to make its use compulsory.

Prevention and Cure of Mental Deficiency.

Sir ROBERT GOWER asked the Minister of Health whether, having regard to the great importance to the community of the prevention and cure of mental deficiency, he would consider the desirability of appointing a Royal Commission or other suitable body to inquire into the causes of mental deficiency, its relationship to other abnormal mental conditions and social problems, and the question of its prevention and cure.—Mr. GREENWOOD replied: I will in due course give this matter the full and careful consideration which its importance demands.

International Sickness Insurance Conventions.

Mr. MANDER asked the Minister of Health whether the Government were prepared to ratify the International Labour Office Convention, 1927, concerning sickness insurance for agricultural workers; and (2) if the Government were prepared to ratify the International Labour Office Convention, 1927, concerning sickness insurance for workers in industry and mines and domestic servants.—Miss BONDFIELD replied: It is the intention of the Government to ratify these Conventions when certain necessary amendments have been made in the National Health Insurance Act as affecting Northern Ireland. The Government of Northern Ireland has announced its intention to introduce the necessary legislation at the first convenient opportunity.

Village Telephone Call Offices.

Mr. KEDWARD asked the Postmaster-General if he would consider the possibility of extending the rural telephone service to the village of Newchurch, Kent, in view of the difficulty which the inhabitants experience in obtaining medical or other assistance in cases of emergency.—Mr. H. B. LEES-SMITH replied: The question of providing telephone call office facilities at the village of Newchurch is under consideration in connexion with the general proposals to establish call offices at a number of rural post offices. I hope that it will be possible to reach a decision soon.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

ANNUAL MEETING.

THE annual meeting of this Association took place in London on July 10th, 11th, and 12th, under the presidency of Dr. NATHAN RAW, C.M.G., who delivered a presidential address on

Fear.

He began by saying that fear was of immense importance to the community and of particular concern to a large number of individuals. A high authority had stated that fear was the driving force of life, without which there would be quiescence and no bodily reactions. Certainly if we had no fear our instinct of self-preservation would be useless. But an aspect which had an enormous bearing on life was a needless and morbid apprehension. The late Dr. Mercier entitled his book "Disorders of Conduct," averring that of mind he knew nothing. Dr. Raw quoted in full Mosso's classical description of his own feelings when called upon to make a speech, and added his own observations on men afflicted with stage fright when required to address their fellows. A former master of his own, who was a professor of rhetoric, at the beginning of a nervous affection could only speak sitting, owing to excessive trembling of the legs, and at last he had to renounce the triumphs of his great eloquence as he was afflicted with a temporary paralysis. The President thought the only way to find a solution of this distressing state was to analyse, without prejudice, all that was known about cerebral activity, and to see what physiologists had discovered in studying the emotions and the physical phenomena of thought.

He acknowledged that it was normal to fear; it was one of the emotional manifestations of a primal instinct and ordinarily expressed itself in efforts at flight or concealment. The Langue-James theory contended that an emotion was the sensation of the visceral changes accompanying it. There was no need of proof that visceral changes accompanied fear, pallor of skin, trembling of limbs, dilatation of pupils, protrusion of the eyes, which were said to be due to excitation of the adrenals. Reflex action played an important part in the exhibition of fear. The Langue-James theory was rejected by many great psychologists. The real solution was that fear was indicative of a defensive mechanism, that this was excited by the perception and realisation of danger, which set in motion a physical mechanism to defend life. Sherrington, by his brilliant work, showed that in animals the basal ganglia were the seat of the primary instincts and emotions. Hughlings Jackson taught that the emotion of fear arose in the cerebral cortex. Cowardice was uncontrolled fear; it was abnormal and antisocial to be a coward. The really brave man did not run away, but not because he had no fear; he overcame it and faced the danger. There was, however, a limit to human endurance, and the diabolical methods used in the late war had played havoc with the nervous systems of thousands of brave men, so that they would never recover.

Fear associated with disease was well known. Delirium tremens was not now nearly as frequent as it was 20 years ago. Edgar Allan Poe, who died of it at 37, had left a ruthless analysis of the experience. Many people lived in constant dread of such diseases as cancer, tuberculosis, blindness, or insanity.

National fear was of immense importance; whole communities might be seized with a subdued fear of attack from more powerful neighbours. The question was often asked: Is religion based on fear? It has been said that fear formed the stock-in-trade of many irrational forms of ecclesiastical propaganda. When religion, which should appeal to the highest instincts in man, debased itself to the point of appealing to the lowest and meanest instincts, it undermined the very foundations of character, poisoning the fountain of life at its source. Any religion which appealed primarily to fear was doomed to decay with the dawn of more universal intelligence. The fear of death had long been recognised as an instinct, and Rousseau said that he who pretended to face death without fear was a liar. This fear was a natural impulse, and was not merely an accident. Schopenhauer, however, said that from the point of view of intelligence there was no ground for fearing death; only those with blind faith could subdue this fear of death. The finest examples in history of the calm resignation to the inevitable were furnished by the aristocrats of France when perishing by the guillotine in the French Revolution.

The description of the human emotions given by Charles Darwin 57 years ago had never been excelled. Worry was a comparatively recent product, though fear dated from the dawn of human intelligence. No children should be brought up to fear their parents or anything else. And too many teachers seemed to think that their secondary, if not their chief, function was the creation in their pupils of inferiority complexes; certainly worry over examinations was a prolific cause of academic failure. We could never hope to conquer fear, but we should learn to control it.

Dr. REGINALD WORTH proposed a cordial vote of thanks to the President for his address, and Dr. BEDFORD PIERCE seconded.

On July 11th Dr. W. M. FORD-ROBERTSON (Northampton) read a paper entitled

Some Cases of Mental Disorder: A Patho-Clinical Study.

In recent years, he said, research into mental disorders had tended to become, more and more, the study of the pathology of the living, and to this the advances of biochemistry had largely contributed. He did not think the study of focal infection by bacteriological methods would lead very far. More effort should be made to correlate its local and remore effects in disordered haemopoiesis, disordered metabolism, disturbed endocrines in relation to the patient's economy as a whole. It seemed that in mental disorders one had to deal with bacteria of a special type, which probably could only adapt themselves as chronic infective agents to a certain group of the community—i.e., those who had a neurotoxic susceptibility. This needed that one should search for new methods of bacteriological technique, study the results, and attempt to correlate cause and effect. Knowledge of the somatic disorders underlying insanity was, as yet, so limited that attempts to continue on these lines would lead only hesitatingly along the progressive path. Efforts should be concentrated more on the individual as a problem in pathology. There had been up to the present a lamentable lack of proper collaboration between biochemist and bacteriologist.

Dr. Ford-Robertson's main thesis consisted of a detailed account of the findings in 120 cases of mental disorder which had been thoroughly overhauled, and four of these were given with minuteness. They served, he said, to emphasise how complex, indeed elusive, were the problems of the physical disorders underlying insanity. His observations led him to believe that the person of psychotic tendencies failed to reveal clearly the underlying pathology of the internal environment by ordinary signs and symptoms. Surgical removal of foci of infection alone could not bring about recovery. Yet focal infection was of the greatest importance in mental disease. He had satisfied himself that the insane harboured anaerobic bacteria of the diphtheroid and lepto-streptothrix group which often infected the major part of the alimentary canal.

Dr. W. F. MENZIES (Cheddleton) discussed the contribution at some length, and expressed regret that the association had not provided in its rules for the admission of the pure biochemist, as he would be a great acquisition for this kind of research.

Dr. J. R. LORD (Epsom) also spoke, pointing out that it was not so much a matter of the presence of septic foci in these cases, but that the toxins were

absorbed. In the latter event a biochemical problem arose, which, if not adjusted, led to dysfunction of some part of the nervous system. Neuro-toxins seemed to have a degree of selectivity of action, different toxins selecting different functional zones.

Other Subjects Discussed.

Dr. GORDON PETERS (Epsom) read a paper on Charcot's Joints in Tabo-paresis. He related three cases of general paralysis of the insane who were also afflicted with Charcot's disease of the spine. One remarkable case was that of a woman of 29, the subject of congenital tabes who had suffered from Charcot's spine from an early age.

The morning of July 12th was taken up with a consideration of the Report of the Mental Deficiency Committee (1929), the discussion being introduced by Dr. A. F. TREDGOLD.

In the afternoon Dr. LORD spoke on a Modern Approach to the Problem of the Admission of Mental Patients to In-patient Treatment. The points he dealt with specifically were: (1) the non-intervention at any point of a judicial authority; (2) the administrative recognition of the non-volitional case; (3) the power of local authorities to deal with (and retain as necessary) occurring mental disorder on lines as far as possible parallel with those practised in regard to infectious and other physical diseases; (4) notification of all non-volitional and involuntary cases to the local authority, and the latter also to a central authority; (5) certification to be abolished and replaced by a system of confirmation or continuation of the initial action taken by the local authority, or by a panel specially nominated by the local authority; (6) all institutions receiving voluntary cases who are retained voluntarily and non-volitional cases to be registered and subject to visitation by the local authority; (7) active prophylaxis by the psychiatrisation of public assistance work.

A discussion followed.

On Wednesday the Association dined together, with the President in the chair, and the guests included Lord Riddell, the Mayor of Westminster, Dr. Pameijer, Sir Arthur Robinson, and several foreign delegates. On Thursday afternoon a reception and garden party took place at Springfield Mental Hospital.

Obituary.

KENNETH ARTHUR LEES, O.B.E., M.B., B.CHIR. CAMB., F.R.C.S. ENG.,

ASSISTANT SURGEON FOR DISEASES OF THE THROAT, NOSE AND EAR, ST. MARY'S HOSPITAL, PADDINGTON.

Kenneth Lees, who died following an operation for cerebral tumour on July 23rd at the age of 48, was the son of the famous physician David Lees, and early decided to follow his father in the study of medicine. He passed from school to King's College, Cambridge, gaining a first-class in the Natural Science Tripos in 1903. In 1905 he elected to join St. Mary's Hospital, where his father, originally a Guy's man, was giving clinical teaching to crowds of appreciative students. Though his untiring energy and keen enthusiasm, when he was working under his father's inspiration, were apparent, Kenneth Lees showed a great inclination towards surgery. He qualified M.R.C.S., L.R.C.P. in 1907, took his Cambridge degree in 1909, and became F.R.C.S. Eng. in 1912. He held a succession of resident posts at St. Mary's Hospital, and in 1914 was promoted to be surgical registrar. During the war years this post was a strenuous one. It involved full afternoons in the theatres and emergency operations, as well as much of the teaching in wards and out-patient department normally undertaken by members of the honorary staff. All those who worked with Mr. Lees during those trying times, when the staff was seriously depleted as the result of the war, testify to his unfailing promptness in answering every call, night and day, and to his equanimity and urbanity. The students who passed through the hospital during this time were indebted to him for coaching at unconventional hours, and many owe their examination success to his conscientious efforts and good-humoured ragging. His services to the hospital were recognised by the award of the O.B.E.

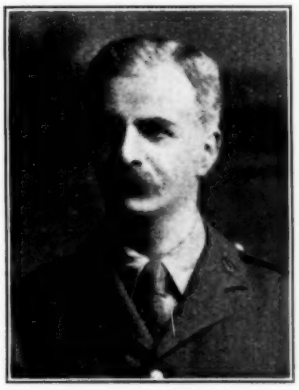
Though Mr. Lees always retained a great liking for general surgery, circumstances led him to specialise in diseases of the nose, throat, and ear; he was appointed to the staff of St. Mary's in 1919, and later to other hospitals, including the Queen's Hospital for Children, Hackney. His interest in this branch of work increased every year, and his wide surgical experience gave him from the outset a mature outlook on all aspects of a case which many specialists only acquire late in life.

Outside his work Mr. Lees had many interests. He enjoyed golf, and his car meant more to him than just a means of easy transport. He was a keen Mason and he was Worshipful Master of his hospital Lodge at the time his fatal illness manifested itself. Kenneth Lees was retiring in disposition, but in congenial company he showed a whimsical humour and keen appreciation of wit in others. He married, a few years ago, a niece of the late Dr. William Hill.

THOMAS EAGLESON GORDON, M.B., B.CH.,

PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND PROFESSOR OF SURGERY, TRINITY COLLEGE, DUBLIN.

THE death occurred on July 27th, at his residence in Dublin, of Prof. T. E. Gordon, President of the Royal College of Surgeons in Ireland, in the sixty-third year of his age. He had been in bad health for several months past, and had recently resigned his post as Surgeon to the Adelaide Hospital, Dublin.



PROF. T. E. GORDON.
Photo by Lafayette, Dublin

Thomas Eagleson Gordon, a North Irishman by birth, was educated at Trinity College, Dublin, doing his professional courses at the Adelaide Hospital; he graduated in 1890, and in 1895 took the Fellowship of the Royal College of Surgeons in Ireland. After holding a resident appointment at the Adelaide Hospital, he was appointed Assistant Surgeon; he had already been elected Visiting Surgeon to the City of Dublin Hospital, but resigned this post to return to the Adelaide Hospital. His professional career was bound up with this institution, for he remained in active work there for 35 years, and was senior surgeon from 1915, until ill-health forced his retirement a few months ago. In 1916 he was appointed to the chair of surgery in Trinity College in succession to the late Mr. E. H. Taylor, and during the war was attached to the 83rd (Dublin) Hospital, B.E.F., with the rank of lieutenant-colonel.

Prof. Gordon was an attractive and accomplished teacher, both in hospital and in his professorial work, while he was particularly interested in his duties as curator of the pathological museum in Trinity College, and did much to make the splendid collection of Robert Smith and Edward Bennett more readily available for teaching purposes. He was a man of wide culture, well read in history and archæology. He was elected President of the Royal College of Surgeons in Ireland last year, and in June of this year was elected for a second year. His death is greatly regretted by his professional brethren.

JOHN BROWN, M.D. MANCH., D.P.H.

FOR many years medical officer of health for Bacup, Dr. John Brown died on July 29th at Blackpool, where he had been living in retirement. He was born at Callington, in Cornwall, in 1849, and attended school there before going up to University College, London. He started the study of medicine at Charing Cross Hospital, and gained a number of scholarships and prizes in that school. On qualifying as L.R.C.P. and L.S.A. Lond. in 1877 he was appointed house surgeon to the Western Ophthalmic Hospital, and later in the same year medical officer of health for Bacup. As a post-graduate student of Owen's College he became M.B. in the Victoria University of Manchester in 1888, when he also took the diploma in sanitary science. Dr. Brown was a prolific writer, and belonged to numerous medical societies in Manchester and elsewhere. His experience in the public health service was considerable, for he undertook many branches of the work of his district. During the 15 years of retirement, which he spent in Blackpool, he devoted a good deal of attention to the subject of cancer. He leaves a widow and five sons, two of whom, Dr. J. P. Brown of Bacup, and Dr. G. B. Brown of Manchester, are members of the medical profession.

Correspondence.

"Audi alteram partem."

AURAL DISEASE AND BATHING.

To the Editor of THE LANCET.

SIR,—Though it has long been known that frequenters of swimming baths, especially deep divers, run some risk of infection of their noses, throats, and ears, the marine bathing pool, to my knowledge, has not yet been impugned. Last summer on my holiday I had the opportunity of daily observation of one such pool, which enabled me to draw certain deductions. This swimming pool had been made by enclosing a portion of the foreshore with a sea wall, the summit of which was completely submerged at every high tide. This arrangement ensured a certain amount of change in the supernatant layer or layers of water, but the bed of the pool necessarily remained undisturbed, and consequently pollutions must have slowly deposited by sedimentation, and would consist of the usual dead organic material found in swimming baths, such as human hair, material from the noses, throats, mouths, intestines, and skins of former bathers, also the remains of dead fish, crustacea, &c. To cleanse such a pool seemed to me to be an impossibility, as the bottom of the deeper portion of the pool was covered with rocks and boulders which had been enclosed when the encompassing sea wall was erected. There was one sea gate or sluice which could be opened, but this only extended to half the depth of the wall, and was consequently useless from the point of view of draining the floor of the pool.

Bathers would be wise to content themselves with the open seashore, and avoid such types of pools, though the keen swimmer would miss thereby the many gadgets, such as diving boards and slides, which render the pools so seductive.

Two cases of infected noses and accessory sinuses came under my notice from this pool, and prompted me to write this letter, as I feel that the hygienic side of such pools has often been, and may again, be overlooked in their construction.

I am, Sir, yours faithfully,

BEAUMONT H. COMERFORD, M.D., D.P.H.

Chester-square, S.W., July 30th, 1929.

To the Editor of THE LANCET.

SIR,—Your annotation on this subject last week (p. 182) has interested me, although its meritorious aloofness rather irritates me at the moment when one of my own children, as a sequel to bathing in a public swimming bath, is recovering from a mastoid operation, in spite of a prompt paracentesis of the intervening acute ear. Nor is my irritation lessened by the fact that my kind specialist colleagues seem to have no doubt of the frequency of these disasters, even in children who have perfectly healthy throats.

If your suggestion is true that in the purification of bathing places "more attention has been paid, as evidence of contamination, to the intestimal flora of the *Bacillus coli* group, than to the pyogenic organisms which more frequently attack the ears," it would seem that the supervision of these places is conducted on lines ten years out of date, and that it is necessary to impress the public health authorities with the great importance of the post-war streptococcus. Further, it would be interesting to know if any special measures are undertaken to prevent excessive contamination of swimming baths in times of great heat and shortage of water.

I am, Sir, yours faithfully,

August 28th, 1929. F.R.C.P.

AN INHERITED TENDENCY TO SUPERNUMERARY DIGITS.

To the Editor of THE LANCET.

SIR,—The following example of heredity in the appearance of supernumerary digits seems to be of interest.

My wife, who has perfectly normal hands and feet (as also have I), gave birth three months ago to a female child which had an extra thumb on each hand and an extra great toe, webbed with the normal on the left foot. My wife's sister was born with an extra thumb on her right hand. One other brother and a sister had normal hands. My father-in-law, his brother and his sister all had a normal number of digits, but the thumbs in all cases were long and tapering, look more like index-fingers and have not the full range of movement of the normal thumb. His mother and her brothers and sisters all, so my information goes, had precisely the same abnormally shaped thumbs, but had no "extras." Going back one further generation, my wife's great-grandmother had extra thumbs on both hands. I do not know if she had any abnormality of the feet.

Apparently, therefore, the inherited tendency passed over two generations, only showing itself as a slight deviation in all cases from the normal in the shape of the thumbs; affected the next in *one* individual only; and was passed down to yet another in an indirect fashion.

I should be glad to have the comments of an expert in Mendelism on this sequence and for a forecast as to the prospects of future individuals exhibiting the characteristic.

For obvious reasons I prefer to sign myself

Yours faithfully,

July 29th, 1929. PHALANX.

VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE.—The report for 1928 shows that 14,469 in-patients, whose average stay was 15·1 days, were treated. The accident cases totalled 20,657, of which 1301 were motor casualties; 436 of them were admitted to the wards. The number of beds available, including 30 at the Innes Hopkin's Memorial Home at Ryton, is 572, but every day in the year the normal number of beds has been exceeded by 28, and on some occasions 80 more beds have been occupied than the number for which the wards were planned. The nurses' home is to be extended by 150 bedrooms, 100 nurses being at present housed elsewhere. The medical staff are pressing for the establishment of a number of paying beds in the infirmary extension vacated by the Ministry of Pensions.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At an ordinary meeting of the College, held on July 25th, with Sir John Rose Bradford, the President, in the chair, the following officers of the College and members of committees were elected for the ensuing year:—

Censors: Dr. Robert Hutchison, Dr. James Collier, Dr. R. A. Young, and Dr. Cecil Bosanquet. *Treasurer:* Dr. S. P. Phillips. *Registrar:* Dr. Raymond Crawfurd. *Harveian Librarian:* Dr. Arnold Chaplin. *Assistant Registrar:* Dr. R. O. Moon. *Library Committee:* Dr. H. R. Spencer, Dr. R. T. Williamson, Dr. Hector Cameron, and Dr. C. J. Singer. *Curators of the Museum:* Dr. H. R. Spencer, Dr. C. E. Lakin, Dr. Hugh Thursfield, and Dr. C. F. T. East. *Finance Committee:* Dr. H. Morley Fletcher, Sir John Broadbent, and Dr. L. S. T. Burrell.

The following were appointed examiners:—

Chemistry: Mr. H. W. Cremer and Mr. W. B. Tuck, D.Sc. *Physics:* Mr. J. H. Brinkworth and Mr. D. Orson Wood. *Practical Pharmacy:* Dr. W. J. Adie, Prof. W. E. Dixon, Dr. Philip Hamill, Dr. Newman Neild, and Dr. V. J. Woolley. *Physiology:* Prof. B. J. Collingwood and Prof. Swale Vincent. *Pathology:* Sir Frederick Andrewes and Dr. Charles Bolton. *Anatomy:* Prof. Duncan Blair. *Medical Anatomy and Principles and Practice of Medicine:* Sir Percival Hartley, Dr. W. J. Fenton, Dr. A. E. Russell, Dr. Cecil Wall, Prof. Frederick Langmead, Dr. E. A. Cockayne, Dr. E. P. Poulton, Dr. D. H. de Souza, Dr. Albert Ramsbottom, Dr. A. C. D. Firth, Dr. F. M. R. Walshe, and Dr. E. Bellingham Smith. *Midwifery and Diseases peculiar to Women:* Dr. Eardley Holland, Dr. J. B. Bannister, Dr. Carlton Oldfield, Dr. Malcolm Donaldson, and Mr. A. C. Palmer. *Public Health:* (Part I.) Dr. Roche Lynch and (Part II.) Dr. Charles Porter. *Tropical Medicine:* Prof. J. C. G. Ledingham and Dr. Harold Scott. *Ophthalmic Medicine and Surgery:* Dr. Grainger Stewart. *Psychological Medicine:* (Part I.) Dr. Edward Mapother. (Part II.) Dr. Porter Phillips and Dr. Gordon Holmes. *Laryngology and Otology:* Dr. Donald Rose Paterson. *Murchison Scholarship (1930):* Dr. Gordon Holmes and Dr. Letheby Tidy.

Dr. Letheby Tidy was elected representative of the College on the General Medical Council in succession to Sir Farquhar Buzzard, and Sir Ewen Maclean a representative on the Advisory Medical Board of the University of Wales.

The Baly medal for distinction in the science of physiology was awarded to Dr. E. D. Adrian, F.R.S., and the Bisset-Hawkins medal for advancing sanitary science and public health to Prof. Edward Mellanby, F.R.S. The Murchison Scholarship was awarded to Ian G. W. Hill, M.B., of Edinburgh University. Prof. J. B. Leathes, F.R.S., was appointed to deliver the Harveian oration, and Prof. W. E. Hume the Bradshaw lecture in 1930. Sir Maurice Craig was appointed a delegate to the Conference of the National Council of Mental Hygiene to be held in October, and Dr. Maurice Davidson a delegate to the Fifteenth Annual Conference of the National Association for the Prevention of Tuberculosis at Newcastle-upon-Tyne in October.

The following further appointments were announced: Dr. Andrew Balfour as FitzPatrick lecturer for 1930; Dr. Carey Coombs as Lumleian lecturer for 1930; Dr. Donald Hunter as Goulstonian lecturer for 1930; Prof. J. J. R. Macleod, F.R.S., as Oliver-Sharpey lecturer for 1930; Dr. L. S. T. Burrell as Mitchell lecturer for 1930; and Prof. Matthew J. Stewart as Croonian lecturer for 1931.

The thanks of the College were voted to Sir Wilmot Herringham and Dr. John Fawcett for their valuable and lengthy services as representatives of the College on the Senate of the University of London.

The President nominated a committee for the preparation of a new edition of the official "Nomenclature of Diseases."

Having satisfied the Censor's Board the following were admitted Members:—

William W. Barraclough, Richard A. Brews, James K. Cameron, Geoffrey P. Chandler, Albert Coleman, Frederick M. M. Eyton-Jones, Kenneth A. Gilchrist, Frederick C. Golding, John S. Harris, Jack Hartsilver, Aubrey J. Lewis, George E. Lewis, Charles W. Mackenzie, William F. T. McMath, Natwar Jaising Modi, Francis J. Niall, Douglas A. Robertson, Raghunath Saran, Cedric W. Shaw, Gordon M. Tallent, and Geoffrey T. Todd.

At the same meeting of the Comitia licences to practise were granted to 149 candidates (133 men and 16 women) who have passed the final examination of the Conjoint Board in Medicine, Surgery, and Midwifery, and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates:—

C. Abraham, Univ. Coll.; S. Annaswami, Madras; M. A. E. Anous, Cairo and King's Coll.; S. W. K. Arundell, Middlesex; Nancy M. Badeley, Royal Free; C. P. Bailey, Cambridge and St. George's; E. F. Barnardo, Cardiff and London; D. W. Bawtree, Cambridge and St. Thomas's; D. R. Belletty, Calcutta and Middlesex; M. J. Bennett-Jones, Liverpool; H. J. W. Bergh, St. George's; W. R. Bett, St. Bart.'s; P. M. F. Bishop, Oxford and Guy's; R. M. Bolam, Cambridge and Durham; J. J. Boulle, London; J. H. Boultbee, Liverpool; K. J. Box, St. Thomas's; Bertha A. Briant, Royal Free; C. E. Brierley, Cardiff and Bristol; H. P. Brody, Sheffield; E. A. Butterworth, St. Mary's; V. I. C. Cadogan, Univ. Coll.; E. H. Capel, Middlesex; F. S. Cliff, Univ. Coll.; F. T. Clive, St. Thomas's; C. L. Collins, Cambridge and St. George's; P. A. Cooper, Univ. Coll.; W. J. Cotton, Oxford and Guy's; J. F. Crabtree, Manchester; S. T. Crowther, Cardiff; P. Dalzell, St. Bart.'s; A. C. Dawes, King's Coll.; Catherine Day, Royal Free; Jessie E. Dodds, Sheffield; C. E. Dolman, St. Mary's; W. J. L. Downing, Middlesex; G. Duckworth, St. George's; T. F. H. Duffell, Birmingham; D. H. A. Edmondson, Liverpool; L. M. Edwards, Cardiff and St. Bart.'s; J. L. Egan, King's Coll.; Cordelia H. England, Cambridge and King's Coll.; I. Q. Evans, Cardiff and St. Bart.'s; M. D. A. Evans, Cardiff and Univ. Coll.; R. G. P. Evans, Middlesex; D. Ezekiel, Charing Cross; R. B. H. Faichney, Liverpool; M. Farid, Birmingham; W. J. Ferguson, Guy's; J. A. Fernandez, Univ. Coll.; K. S. Fitch, Guy's; S. K. Foster, Leeds; W. W. Fox, Manchester; A. W. Franklin, St. Bart.'s; A. Freitag, Cracow and Charing Cross; R. L. Frost, Guy's; Ruth C. Galletly, Royal Free; S. Gasson, St. Bart.'s; N. D. Gerrish and J. J. J. Giraldi, Bristol; Elizabeth L. Haden, Univ. Coll.; Hafizuddin, Agra and Charing Cross; Nellie M. E. Hallinan, Charing Cross; Margaret L. Hamburger, Royal Free; A. G. J. Harris, Cambridge and St. Bart.'s; R. L. H. Harris, St. Bart.'s; F. Hawking, Oxford and St. Bart.'s; Dora M. Hill, Charing Cross; R. E. Holmes, London; I. P. G. Howells, Cardiff and St. Mary's; W. V. Howells, Cambridge and London; J. M. Hulett, Guy's; Laura F. Hutton, Charing Cross; D. E. Hynam, Manchester and Charing Cross; K. G. W. James, King's Coll.; S. K. Jatar, Bombay and London; A. N. Jones, Guy's; D. S. Jones, St. Bart.'s; H. H. Kenshole, Cardiff and Guy's; T. H. Khan, Calcutta and King's Coll.; C. W. Kidson, Birmingham; S. Knight, Univ. Coll.; M. Kokia, Westminster; M. Kremer, Middlesex; J. Libman, Liverpool; F. J. G. Lishman, Univ. Coll; M. Luckeenarain, Univ. Coll.; S. D. McClean, Guy's; W. H. McMenemey, Oxford and St. Bart.'s; A. H. M. McMullan, Birmingham; R. G. Mayer, Bristol; R. B. Mayfield, Cambridge and St. Thomas's; D. A. Metcalf, Cambridge and London; V. L. Misso, King's Coll.; S. N. Mistri, Bombay and London; W. J. Moffat, Cambridge and St. Thomas's; A. B. Moffatt, Manchester; G. B. Mohile, Bombay and Guy's; R. D. Morgan, Cardiff and Middlesex; Q. St. L. Myles, Oxford and St. Thomas's; T. Nallainathan, Ceylon and Univ. Coll.; R. A. Nash, Guy's; E. J. Neill, St. Bart.'s; P. L. Nirula, Punjab; F. E. Norris, London; S. W. K. Norris, Birmingham; L. J. O'Loughlin, Manchester; H. J. Partington, Liverpool; Penelope A. Peach, Royal Free; W. Pearce, Leeds; A. L. Pereira, St. George's; R. B. Pringle, Cambridge and St. Thomas's; G. E. A. Prins, Calcutta and St. Mary's; C. B. Prowse and W. Radcliffe, Cambridge and St. Bart.'s; B. Rait-Smith, St. Bart.'s; Florence Ram, Sheffield and Cambridge; B. V. P. Reddy, Bombay and London; W. H. Reynolds, Cardiff; P. J. Richards, Cambridge and St. Bart.'s; K. M. Robertson, St. Thomas's; J. A. Robson, St. Bart.'s; Irene H. Rogers, King's Coll.; H. L. Rogerson, St. Bart.'s; I. A. Sabri, Cairo and St. Bart.'s; R. M. Sargent, Univ. Coll.; C. K. Sconce, Liverpool; J. M. Scott, St. Bart.'s; R. P. W. Shackleton, Cambridge and St. George's; Everell M. Shipham, Royal Free; S. Simon, Leeds; A. R. Smith, St. Thomas's; W. H. B. Spoor, Cambridge and Bristol; L. Stirling, London; A. G. C. Taylor, St. Thomas's; E. W. Thompson, Manchester; D. J. Turnbull, London; J. O. B. van Langenberg, Ceylon and Middlesex; M. H. Wace, St. George's; J. V. Walker, Birmingham; R. Warnecke, Adelaide and London; J. A. White, St. Mary's; J. O. Williams, St. Bart.'s; J. K. Willson-Pepper, Cambridge and St. Thomas's; Camille Wiseham, Royal Free; M. G. Woolff, Cape and St. Thomas's; L. C. Wright, Manchester; P. Yarmarko, Manitoba and Middlesex; and D. J. Young, Middlesex.

The undermentioned diplomas were conferred (jointly with the Royal College of Surgeons) upon the following candidates:—

Diploma in Public Health.—K. P. Anklesaria, D. D. Bhargava, D. L. Brown, H. A. Bulman, Helen Bumstead, K. Cathiravelu, K. B. Chakravarti, A. N. Chatterji, M. Das, A. W. H. Donaldson, D. C. Farquharson, Loveday S. Farquharson, J. W. Fisher, L. Fourie, Hilda M. Garlick, D. Hughes, A. T. Jones, Margaret M. McDowall, Aileen I. McMahon, A. Macmillan, H. H. Mahmood, A. J. Mhatre, S. Mozumder, Joan Nixon, J. D. Robertson, A. S. Simpson, G. Singh, W. S. Slater, J. H. Stritch, R. Watson, Edith S. Williamson, and Frances M. Yule.

Diploma in Ophthalmic Medicine and Surgery.—Agnes L. Adam, B. Alexander, P. K. Banerjea, W. A. Briggs, R. D. W. Butler, S. N. Cooper, V. A. P. Costobadie, T. Edmunds, Julia M. Fleming, A. A. Gibbons, S. L. Geerin, I. C. Fraser, J. R. McClean, N. Manson, R. S. Marya, M. D. Nunan, P. Pattabhiramaiya, A. M. Ponnambalam, C. S. V. Ramanan, K. Sen, L. B. Somerville-Large, B. R. Tandan, M. Tree, T. K. Uttam Singh, D. G. Vyas, and G. B. White.

Diploma in Psychological Medicine.—Leonard Barber, Flora H. M. Calder, Viola C. Cameron, Ruby T. Carr, S. W.

Davies, J. H. Ewen, E. A. Haslam-Fox, J. E. S. Lloyd, Seringapatam V. S. Rao, and Kathleen M. Todd.

Diploma in Laryngology and Otology.—Bodh Raj. Chaudhri, Patrick Hickey, G. J. Hutchison, Rajnarain Kacker, W. A. Kerr, K. S. May, R. F. Paterson, C. L. Rosenfield, and Gobind Vaishnavi.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College on July 23rd, with Mr. Alexander Miles, the President, in the chair, the following 27 successful candidates (out of 81 entered) who passed the requisite examinations between March 21st and 28th were admitted Fellows:—

George Brown, Eva Taylor Cairns, John Campbell, Kewal Ram Chaudhri, Douglas Bannerman Craig, Ross Alfred Grant, Guthrie Yochlee Graves, Thomas Paterson Gill, David Hardie, Arthur Taylor Henry, Reginald Stuart Jones, Ganesh Das Kapur, John Kerr Ritchie Landells, Donald Percy McDonald, George Henry Mohony, Ma Yin May, Andrew Patrick, William Valentine Semple, William Stewart Shearer, Balwant Singh, Narain Singh, William Collis Spackman, Robert Scott Stevenson, George Munro Sturrock, Alan Boardman Taylor, Maxwell Kidger Tucker, and George Sydney Thompson

Dr. Hari Prakash Lal obtained the diploma of Licentiate of the College.

The Ivison Macadam Memorial Prize has been awarded after a competitive examination in Organic Chemistry to Mr. C. D. Campbell.

UNIVERSITY OF GLASGOW.—It is announced that Sir Donald MacAlister will retire in October from the offices of Principal and Vice-Chancellor of the University.

UNIVERSITY OF LEEDS.—On July 23rd the honorary degree of D.Sc. was conferred on Dr. C. H. Mayo of Rochester, Minnesota.

ST. MARY'S HOSPITAL.—Lord Iveagh has promised to give £20,000 towards the extension of the St. Mary's Hospital Therapeutic Inoculation Department which is under the direction of Sir Almroth Wright, F.R.S. This sum will be paid in seven annual instalments and the hospital will thus be able to claim income tax and surtax so that over £30,000 will be available for the building of a pathological institute beside the hospital.

WALLINGFORD DISTRICT HOSPITAL.—The Morrell Memorial Hospital, so named after Miss Mary Morrell, the founder in 1879 of Wallingford Cottage Hospital, a nurse who died from septic poisoning contracted in her work, was last week superseded by a new District Hospital. The building contains 18 beds in three wards, and two private wards, and is equipped with modern appliances.

Dr. Arthur Edward Giles, consulting surgeon to the Chelsea Hospital for Women and gynæcologist to the Prince of Wales General Hospital, Tottenham, has been elected Master of the Drapers Company. He is the first member of the medical profession to fill the office of Master of this Company, whose records go back to the fourteenth century.

DONATIONS AND BEQUESTS.—The late Mr. Frederick Dempster-Smith, of London and Bournemouth left £25,000 to the Governors of St. Bartholomew's Hospital for the endowment of a ward in memory of his late friend William James Marriage ("Sol"), a corporal-major in the Household Battalion, who was killed in France, to be called the Sol Memorial Ward.—Mr. George Turner of Edgbaston, Birmingham, left £1,250 to the Birmingham General Hospital, and £1,000 each to the West Bromwich District Hospital, Royal Midland Counties Hospital for Incurables, Leamington, and the Quest Hospital, Dudley.—Mr. Elias Sumner Berry of Southport left £1000 to the Preston and County of Lancaster Queen Victoria Royal Infirmary to name an "Oswald William Berry Bed" in memory of his son who was killed in action in France.—Mr. Alfred Thomas Johnson Ward of Brislington, Bristol, left £500 each to Bristol Royal Infirmary, Bristol General Hospital, Bristol Eye Hospital, and the Royal School of Industry for the Blind, Westbury-on-Trim.—Lady (Elizabeth Ann Phippen) Esme Gordon of Princes-gardens, London, left £100 to St. George's Hospital, £300 to Britsol Infirmary, £250 each to the London Hospital, Queen Mary's Hospital, Roehampton, S.W., St. Dunstan's Hostel for Blinded Sailors and Soldiers, National Society for the Prevention of Cruelty to Children, and Our Dumb Friends' League. After legacies to servants and others, the testatrix left the residue of her property equally between St. Bartholomew's Hospital, St. Thomas's Hospital, Middlesex Hospital, Cancer Hospital, Fulham-road, the Hospital for Sick Children, Gt. Ormond-street, the National Institute for the Blind, and the Distressed Gentlefolks' Aid Association.—Mr. Alfred Norman Disney of Wimbledon, left £1000 to the building extension fund of the Nelson Hospital, Merton.

CHARING CROSS HOSPITAL NURSES' HOSTEL.—St. Mary's Convent, Haverstock Hill, has been purchased by Charing Cross Hospital as the site of a new nurses' hostel. The spot is easy of access from the hospital by the Hampstead Tube.

LONDON HOSPITAL SUNDAY FUND.—The Council of this Fund reports that the amount received in the past year was £78,130, being £3300 less than in the previous year. Of this sum £77,949 is to be distributed among 165 hospitals, 32 dispensaries, and 35 nursing associations.

EAST HAM WAR MEMORIAL HOSPITAL.—On Wednesday in last week the Queen opened this general hospital, which is a memorial to 2000 local men who fell in the war. Its genesis was the East Ham Cottage Hospital, founded in 1902 with 25 beds, which has now been converted into children's wards. The new building contains 100 beds and has cost £75,000.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH.—This hospital in Grove End-road, St. John's Wood, which was founded in 1856 by four of the Sisters of Mercy who had been working with Miss Florence Nightingale, last year treated 1542 in-patients—an increase of 177 over the preceding year—of whom 321 were private patients. There were 1131 operations, the X ray department has been enlarged, and the rebuilding of the first portion of the nurses' home is approaching completion. The second portion is urgently needed, the old building being in bad structural condition. The hospital contains six wards and there are 18 rooms for private patients, including two for persons of small means, for which the charge is £2 10*s.* per week. Eight rooms, moreover, are reserved for priests and nuns of the Roman Catholic diocese of Westminster, but the hospital is entirely undenominational. The total weekly cost per patient is £4 6*s.* and of the £25,526 spent during the year only £2835 was derived from investments. There are 134 beds and the hospital is a training school for radiographers and for Roman Catholic nurses.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—At the annual meeting last week the Council reported that the special appeal for £100,000 had produced £110,941. From this money grants have been made to the Burrow Hill Sanatorium Colony, at Frimley, and towards the establishment of workshops for tuberculous patients. The Burrow Hill Colony is an experimental scheme for providing treatment and technical education for tuberculous boys from 14 to 19 years old under medical and scholastic supervision (see THE LANCET, 1929, i., 673). It contains 80 beds, 60 of which are provided for arrested cases; the other 20 are in a separate block for patients in the earlier stages of the disease. The institution is primarily intended for youths suffering from pulmonary tuberculosis in whom permanent arrest of the disease is ultimately likely to be secured, and who are in need of, and temperamentally fitted for, technical education, which consists of gardening and clerical work. For the rest, four medical men have been engaged as Medical and Assistant Medical Commissioners who, in addition to general propaganda work, act as lecturers. Three motor vans, with interesting exhibits, including films, have been equipped, and illustrated lectures have been given in many parts of England and Scotland. The educational work is organised by Dr. William Brand, the Medical Commissioner.

CHADWICK TRUST SCHOLARSHIPS.—In view of the quality and number of the applications received for the two Chadwick travelling scholarships in sanitary science and municipal engineering, the trustees have decided to make three instead of two appointments.

The scholarships are of £400, tenable for one year, and the successful candidates are: Francis Bach, M.D. Oxf., Out-Patient Medical Officer of the National Heart Hospital, to whom a scholarship is granted "for the purpose of investigating the environmental and other causes of rheumatic diseases and their influence in producing diseases of the heart"; Edmund A. Elsby, B.Sc., of Liverpool University, who will study and collect data respecting the removal of silica dust from the atmosphere in factories; and John B. Dempster, B.Sc., Glasgow University, who will study sewage and sewerage with special regard to trade waste.

The Bossom Gift Scholarship of £100, to enable the holder to make a specialised study and present a scheme showing the most complete and efficient system of heating and ventilation adaptable to a hall seating about 1000 people, with smaller rooms attached and a set of residential quarters in the same building, is offered for competition. Candidates, who must be British subjects, should apply in proper form between August 26th and Sept. 30th to the clerk of the Chadwick Trustees, at 204, Abbey House, Westminster.

ENLARGEMENT OF BOSCOMBE HOSPITAL.—Four new wards for men, containing a total of 12 beds, were opened last week at the Boscombe branch of the Royal Victoria and West Hants Hospital. The largest ward, of six beds, is named after the late Mr. Augustus Gould, one of the benefactors of the Hospital.

A NURSERY SCHOOL IN LIVERPOOL.—The Liverpool Education Committee have approved a resolution by the Elementary Schools sub-committee recommending the City Council to authorise the establishment of an experimental nursery school to accommodate about 200 children between the ages of 2 and 5 years. The aims of the school are stated to be: (*a*) To foster all-round healthy physical development by providing a favourable environment, by training in hygienic habits, and by encouraging free activity; (*b*) to lay the foundations of intellectual development by providing a great variety of interesting experiences, by special training, and by such simple instruction as is suitable; and (*c*) to lay the foundations of character by the inculcation of self-respect and consideration for others. Formal lessons will have no place in the curriculum. The children will be taken daily to and from their homes. The cost to the ratepayers will be about £17 per head per annum, which is less than half the expense of children at Corporation day nurseries.

SUN-BATHING IN PUBLIC PARKS.—On July 29th Mr. George Lansbury, the First Commissioner of Works, received a deputation including Dr. C. W. Saleeby, Sir Arbuthnot Lane and Sir Alfred Fripp, which put forward, pleas for extended facilities for sun-bathing in public parks. Sir Richard Paget outlined a scheme for a permanent sun-bathing colonnade on the west bank of the Serpentine in Hyde Park, and appealed to the Department to encourage the granting of permission all over the country for the wearing of bathing shorts. In his reply, Mr. Lansbury referred to the fundamental need for providing more sunlight in the homes of the people, and spoke of the care which was taken to see that those in mental homes and prisons should get plenty of light and air. Similar regulations were made for children in class rooms. The only time when the law did not insist on the proper cubic space was when the children were asleep, which seemed to him one of the maddest things in the world. He hoped that legislation to be introduced in the autumn would deal with the slum problem so drastically that no child could in future be born in an underground basement.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

ALL SAINTS' HOSPITAL, Vauxhall Bridge-road, S.W. Special Course in Urology. Afternoons and evenings until the end of August. Further information from the Secretary, Fellowship of Medicine.

Appointments.

GREGORY, J. C., L.R.C.P. Lond., M.R.C.S., has been appointed Obstetric House Surgeon at University College Hospital.

Certifying Surgeons under the Factory and Workshop Acts: HENDRON, M. F., M.B., Ch.B. Belf. (Croston, Lancs.); and MOWAT, J., M.B., Ch.B. Glasg. (Chapel-en-le-Firth, Derby).

Vacancies.

For further information refer to the advertisement columns.

Aylesford, British Legion Village, Preston Hall Sanatorium.—Second Asst. M.O. £200.
Barnsley, Beckett Hospital and Dispensary.—H.P. £140.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £150.
Basingstoke, Park Prewett Mental Hospital.—Jun. Asst. M.O. £350.
Birkenhead General Hospital.—Cas. S. £100.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £120.
Brighton, Royal Sussex County Hospital.—H.S. £150.
Burton-on-Trent, General Infirmary.—2nd Res. H.S. £150.
Bury Infirmary.—Sen. H.S. 2nd H.S. Also 3rd H.S. At rate of £200, £175, and £150 respectively.
Cardiff Royal Infirmary.—Aural H.S. At rate of £75.
Carlisle, Cumberland Infirmary.—H.P. Also H.S. to special Departments. Each at rate of £155.
Cheshire Joint Sanatorium, Market Drayton, Salop.—H.P. £250.
Colonial Medical Services.—Vacancies.
Dudley, Guest Hospital and Eye Infirmary.—H.S. £150–£175.
East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £150.
Exeter, Royal Devon and Exeter Hospital.—Asst. H.S. At rate of £100.
Glasgow, Govan District Asylum.—Jun. Asst. M.O. £325.
Great Yarmouth General Hospital.—Sen. H.S. £150.
Ilford Emergency Hospital.—Sen. and Jun. H.S.'s.
Infants Hospital, Vincent-square, Westminster.—Anæsthetist.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. At rate of £120.
Kidderminster and District General Hospital.—H.S. At rate of £150.
Liverpool, Ministry of Pensions Hospital for Epileptics, Maghull.—Jun. M.O. £300.
Liverpool Open Air Hospital for Children, Leasowe.—Jun. Res. M.O. At rate of £200.
Liverpool, Royal Liverpool Children's Hospital.—Res. M.O. for Heswall Branch. At rate of £120. Also 2 Res. H.P.'s and 2 Res. H.S.'s for City Branch, Myrtle-street. Each at rate of £60.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
London Homœopathic Hospital, Great Ormond-street, W.C.—Asst. Surgeon for Diseases of the Eye.
Lowestoft and North Suffolk Hospital.—H.S. £120.
Manchester, Ancoats Hospital.—Orthopædic H.S. Also H.P. Each at rate of £100.
Manchester Royal Infirmary.—Jun. H.S. £100.
Middlesex Hospital Medical School, W.—Second Demonstrator in Physiology. £250.
Miller General Hospital, Greenwich-road, S.E.—Hon. P. to Skin Dept. Also Cas. O. At rate of £150.
Northwood Mount Vernon Hospital.—H.S. At rate of £40.
Nottingham General Hospital.—Asst. Res. Cas. O. At rate of £150.
Nottingham Children's Hospital.—Res. H.S. At rate of £150.
Oldham County Borough Education Committee.—Asst. Schools M.O. £600.
Richmond Royal Hospital.—Jun. H.S. £100.
Rotherham, County Borough of.—Deputy M.O.H., &c. £650.
Rotherham Hospital.—H.P. £180.
Royal Air Force Medical Service.—M.O.'s.
Salisbury General Infirmary.—Res. H.P. £150.
Scarborough Hospital and Dispensary.—Two H.S.'s Each at rate of £126.
Shipley, Urban District of.—M.O.H. £800.
Swansea Hospital.—H.S. £150.
Weston-super-Mare, Queen Alexandra Memorial Hospital.—Res. M.O. £130.
West Riding of Yorkshire.—County M.O.H. £1,600.
Woolwich and District War Memorial Hospital, Shooters' Hill, S.E.—Jun. H.S. At rate of £125.
Worcester General Hospital.—Sen. and Jun. Res. M.O.'s. £180 and £120, respectively.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Bristol (Glos.), and Brentford and Ealing. (Middlesex).

Births, Marriages, and Deaths

BIRTHS.

BATTEN.—On July 27th, at a nursing home, Hampstead, the wife of Lindsey W. Batten, M.B., M.R.C.P., of a son.

HEGGART.—On July 18th, at Victoria Cottage, Rowhedge, Colchester, the wife of Dr. John E. Heggart, of a son.

DEATHS.

BOTT.—On July 21st, at The Bungalow, Percy road, Broadstairs, Stanley Bott, M.D., L.R.C.P., M.R.C.S., aged 50, late of Tower House, Caistor, Lincs.

GRAVELY.—On July 24th, at Cowfold, William Homewood Gravely, M.R.C.S., L.R.C.P.

LEES.—On July 23rd, Kenneth Arthur Lees, F.R.C.S., formerly of Weymouth-street, W.

LUCAS.—On July 23rd, Thomas John Rashleigh Lucas, C.B., colonel (retired), A.M.S., late of Bury-street, St. James's, S.W., son of the late George Lucas, of Ballinadee, Co. Cork, Ireland, aged 71.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. I., 1929.

THE Index and Title-page to Vol. I., 1929, which was completed with the issue of June 29th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Notes, Comments, and Abstracts.

FOUR MILLENNIUMS OF CHINESE MEDICINE.

By K. C. WONG.

(*Concluded from p. 208.*)

IV. The Modern or Transitional Period.

Transitional is a fitting term for the Tsing Dynasty, for during this period Chinese medicine showed a gradual and perceptible decline until 1805, when it received a fresh shock by the introduction of Western Medicine. Struggling under the yoke of an alien race naturally, the scientific advancements made could not be compared with those made in other Dynasties. Emperor Kien Lung, however, was a great patron of literature, and as an outcome of his encouragement the "Golden Mirror of Medicine" was produced. This is a sort of encyclopædia of medicine and surgery compiled by a committe of doctors at the order of the Emperor. It summarises the corrections and revisions of many ancient works and epitomises all the recent methods and discoveries. The "Golden Mirror" is recognised as a standard work.

An interesting figure of this time was Wang Hsun-shan, who is sometimes styled the reformer of Chinese medicine. He was the author of "Correction of Medical Errors," a remarkable little work which contains many ingenious opinions concerning anatomy and pathology, based on 42 years medical experience, and the observations of 30 decapitated human bodies. Unfortunately the corrections are erroneous. The book, though of not much scientific value, is full of original ideas, the opinions on the causation of hemiplegia, and on the brain as the organ of thought, being especially interesting.

Vaccination.—The Western method of vaccination was introduced into China in May, 1806. It was brought over from the Philippines to Macao, whence it spread to Canton and other places. It is remarkable that a century before Jenner's epoch-making discovery the Chinese seem to have had an idea of vaccination, for in the "Synopsis of Ancient Herbals" the use of fleas from the cow for the prevention of small-pox is mentioned—is it wholly impossible that the fleas of a cow affected with variola, when taken by the mouth, might have an effect analogous to that of vaccination? That this treatment was once popular suggests that there may be some efficacy in it; if so, and if there had been a Chinese Jenner to follow up the clues millions of lives might have been saved.

Western Medicine.

In 1805 Dr. Hobson, an Englishman, came to Canton to be followed later by Drs. Parker, Kerr, and others. Silently and steadily these pioneers of Western medicine worked their way, and in spite of the proverbial conservatism of the people it has now gained a firm foothold. Only a few historical landmarks will be given.

The first Chinese who studied foreign medicine abroad was Wong Cheuk Hing. A native of Canton he was born in 1832, and obtained his English education in Macao and Hong-Kong. In 1840 he followed a Mr. Brown to America for further studies where he stayed for four years. After his graduation in literature he went over to Edinburgh to study medicine, receiving his degree in 1855. Two years later he returned to China and worked in the various hospitals in Hong-Kong and Canton until his death in 1878. With the return of a number of graduates from Japan in 1899 a new situation was created. Hitherto all Western medical work was entirely in the hands of European and American doctors. Through the writings and influence of this new body of men, Japanese medicine, and especially Japanese medical terms, became popular. They founded schools and hospitals and gradually developed into a new force in Chinese medical matters. Many of them are now holding important positions in the Government.

The new era in modern preventive medicine may be said to have dated from 1911. The great pneumonic plague in Manchuria demonstrated to the people the superiority of Western science as compared with the old native methods for the suppression of plague. Since that time many laws governing the notification of infectious diseases, the standardisation of medical education, the dissection of dead bodies, the registration of medical practitioners, the sale of narcotic drugs, &c., have been passed. In 1914 the National Medical Association of China, which has for its members the most prominent graduates from European, American, Japanese, and Chinese Colleges, was founded. Prior to this teachers and authors had great difficulty in their work because of the lack of uniform scientific terms. In 1915 a Terminology Committee was appointed, consisting of representatives of the Ministry of Education, National Medical Association, Medical and Pharmaceutical Society, Medical Missionary Association, and Kiangsu Educational Association, to determine the terms to be used throughout China. In order to promote public health and sanitation among the masses a joint Council of Public Health Education was formed in 1916 consisting of representatives from the National Medical Association, Medical Missionary Association, Y.M.C.A., Y.W.C.A., and China Christian Educational Association. All these organisations are doing splendid work towards the medical progress of China.

The formal opening of the Union Medical College and Hospital at Pekin on Sept. 15th, 1921, adds another chapter to the annals of medicine in this country. The whole plant covers an area of about 10 English acres and costs approximately five million dollars gold. It is the first medical school in the Orient, not only in the magnificance of its architecture, but also in the completeness of its outfit. Great things are expected of this institution.

The Missionary Doctors.

In conclusion, the highest tribute must be paid to the missionary doctors who were the earliest to found hospitals, organise schools, and promote public health and hygiene, &c. They have brought a new light and a new hope to the teeming millions of suffering humanity. Though handicapped by insufficient funds, lack of proper equipment, and other adverse conditions, these men laboured with incessant zeal, gradually gaining ground until Western medicine attained its present position. The institutions they founded are scattered throughout the country. They are not only centres of healing but are also factories of learning, whence, every year, a small army of trained men are sent out to join those in the field to fight the demons of ignorance and disease. Inspired by the noble efforts of these pioneers, the Government and other public bodies have started to establish hospitals and schools of their own. Some of these are well organised and fully equipped. In the years to come the work of the missionary doctors may be eclipsed and eliminated. But their great contribution to medical advancement and to human progress in China will for ever remain.

Conclusion.

Such is a brief epitome of medicine as it has existed and been practised in China. While the Chinese anticipated many discoveries, collected a great variety of facts, invented some valuable methods and brought a few to a high degree of excellence, yet they have never pursued a single subject in a way calculated to lead them to final success. The circulation of blood, anæsthetics, X rays, vaccine therapy massage, catheters, hypnotism, hydrotherapy, hygiene, organotherapy, &c., had all been hinted at, but remained barren of results until centuries later Western science stepped in and secured the prize. The field of Chinese medicine is still a veritable virgin soil. There are golden opportunities for research workers to break open the hidden wealth of treasures. The day will come when Chinese medicine will pass through this stage of transition to emerge once more, purified and strengthened, and lead again the medical thoughts of the world.

RATING OF BRIGHTON HOSPITALS.

As the result of action through the Social Service Centre at Brighton, an agreement has just been reached in regard to the assessment of charitable institutions in the town. Strong representations had been made of the great hardships which would be inflicted upon the hospitals if the figures arrived at by the Corporation valuer, when the town was re-assessed under the Rating and Valuation Act, 1925, were allowed to stand. As the result of the representations, the Corporation valuer (Mr. H. P. Nye), in conjunction with Mr. Gerald Eve, have thoroughly reviewed the position. They took into consideration the assured income of the hospitals as against voluntary contributions, and those institutions which depended mostly on voluntary contributions were valued at a proportionately lower figure than those which derived an assured income from grants from State or municipal funds, or from payments by beneficiaries. The result has been as follows, the figures in parenthesis denoting the original assessment, while the other figures show the new assessment as proposed under the Rating and Valuation Act, and those which now stand as the final settlement.:—

	New.	Final.
	£	£
Royal Sussex County Hospital (£175) ..	4,103 ..	2,040
Royal Alexandra Hospital for Sick Children (£48)	1,290 ..	685
New Sussex Hospital (£80)	660 ..	364
Sussex Eye Hospital (£24)	300 ..	162
Sussex Maternity Hospital (£124)	636 ..	364
Sussex Throat and Ear Hospital (£28) ..	450 ..	266
Brighton, Hove and Preston Dispensary (£47)	260 ..	122
Dental Hospital (£24)	90 ..	58